

1979

A formal theory of organizational power

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A FORMAL THEORY OF ORGANIZATIONAL POWER.
IDWA STATE UNIVERSITY, PH.D., 1979

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A formal theory of
organizational power

by

Meridean Leone Maas

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Department: Sociology and Anthropology
Major: Sociology

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

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For the Graduate College

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1979

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CHAPTER I. INTRODUCTION

Organizations are pervasive in contemporary society. Few aspects of living, apart from private thoughts or rare spontaneous interactions, are nonorganizational. Even our private thinking and individual interactions are often indirectly impacted by organizations (Hall, 1977). Organizations provide the means whereby individuals collectively accomplish ends that cannot be attained by persons acting alone. No one would deny the enormous benefits that accrue to society because of organizations.

Power is a crucial dynamic for organizations if they are to accomplish collective interests. While the study of organizations and their relations has become a major area of sociology, the study of organizational power relations has received too little attention until recent years. There is need to understand the process of organizational power as a social phenomenon that is both advantageous and ominous for societies.

The general objective of this dissertation is to enhance the understanding of organizational power by constructing a formal theory of power as a process characterizing the relations among organizations. Chapter I will include: (1) the statement of the problem, (2) a discussion of the significance of the problem, and (3) the contributions of the thesis to the study of interorganizational relations and more

generally to the study of social organization.

The Study Problem

The construction of a formal theory of organizational power, as a property of relations among organizations, is one means by which explanation and understanding of the power process and the antecedents and consequences of organizational power can be increased. The process of organizational power, like the process of social power generally, is one of the least understood processes of social organization (Olsen, 1978).

Social power is a process that characterizes relationships among actors (Olsen, 1978). Actors can be individuals or social collectivities, but actors do not possess power in isolation (Olsen, 1978). Social power exists only as actors enter relations with other actors. For this exercise the actors of interest are organizations. Organizational power is viewed as the ability of organizational actor A to control and convert resources for its outcomes of interest relative to the ability of organizational actor B to control and convert resources for its outcomes of interest.

One reason for the lack of understanding of the social power process may be that power, while conceived as a process, has not been explicated so that the component elements of the process can be examined and the relationships among elements analyzed. The multidimensionality of power as a social process has not been delineated. The concept of power suffers numerous ambiguities regarding its meaning, and is a

concept that must be measured indirectly. The result is an inability to select valid measures for empirical study. While there is a growing body of literature containing statements and propositions relating power to other relevant concepts, a formal theory of social power that is testable is yet to appear.

The problem for this dissertation is to develop a formal theory of the process of organizational power. Application of the criteria of formal theory construction will be used to explicate the process of organizational power, develop propositions regarding the process of power and organize the propositions into an interrelated set that can be subjected to empirical test. The specific objectives of the study are to:

- (1) elaborate a conceptual definition of the concept of organizational power as a multidimensional process of relations among organizational actors,
- (2) explicate the dimensions of the process of organizational power and develop theoretical and operational definitions of the concepts central to each dimension,
- (3) develop propositions linking concepts of the dimensions of the power process with clarification of theoretical and operational linkages,
- (4) order the theoretical propositions into an interrelated set by selecting some statements as premises or assumptions and arranging the remainder into a model of causal relationships,
- (5) identify specific indicators for the concepts contained in the

causal model,

- (6) empirically evaluate the causal model, and
- (7) assess the exercise of theory construction and evaluate the formal theory in terms of the contributions to the understanding of the process of organizational power.

The study of power in interorganizational relations

The aim of this thesis is to contribute to the understanding of interorganizational relations focusing on the process of organizational power as a pervasive feature. Interorganizational analyses have become more frequent in recent years. And the prominence of organizational actors that wield extensive power has been noted (Coleman, 1974). The process of social organization not only includes the emergence of collectivities of individuals as actors but also the structuring of relationships among collective actors as additional phenomena that have implications for modern social life. This continuing process of emergence can be seen in the variety of interconnected organizations that impact the lives of individuals. Networks of organizations that have increasing scope make it ever more difficult for individuals to understand or control the influence they have on their lives. This is apparent for public organizations where bureaucratic norms of administrative efficiency have pressed for interconnectedness as well as for private organizations where cartels are formed to gain an advantage in market competition. Clearly, interorganizational networks and power relations are significant phenomena in modern society

(Hall, 1977).

There has been a paucity of attempts to analyze the process of power that include all its ramifications for interorganizational relations. One reason may be that there are basically two different theoretical orientations to the study of power. These two approaches are linked with two dominant sociological paradigms - coercion and consensus (Dahrendorf, 1959). Organizational sociologists have tended to emphasize an integration or consensus approach to the study of organizations, stressing the ways organizations seek to maintain equilibrium while attempting to achieve their goals. In this approach similarities among actors are emphasized which give rise to consensus. Power is generated by actors' investments in shared common values (Parsons, 1963). This approach has tended to cause a bias toward study of intraorganizational power.

The coercion (conflict) perspective stresses differences among actors in interests, values and resources which result in mutual dependencies. "Power resides in the mutual dependency which occurs in all social relationships" (Emerson, 1962). This view of power has received limited attention by organizational sociologists until recent years. But it holds potential for an expanded interest in studies of interorganizational power relations. The emphasis to date has been on adaptation to environmental dependencies rather than on how organizations gain power or dominance to control environmental contingencies.

While these two views of power offer contrasting approaches for analysis of the power process, they are not logically incompatible

(Olsen, 1978). This exercise includes elements of both approaches in the conceptualization and explication of the process of organizational power.

Units of interorganizational analysis

A number of different units of analysis are employed at the inter-organizational level including the interorganizational field, the organization set or network, the organizational dyad and the relations of a single organization with the aggregate of organizations in its set.

The most comprehensive unit that has been described is the organizational field (Warren, et al., 1964; Rogers, 1974b). An organizational field includes the total structured interactions of organizations that have a character distinct from those of any single organization or subset of the field. Field structures form a context for organizations and are important environmental considerations for their activities (Emery and Trist, 1965; Terryberry, 1968; Turk, 1973).

Evan (1966) advanced the notion of the organization set as a unit of interorganizational analysis. An organization set for a single organization is the network of interactions carried on by that organization with other organizations in its environment. Task environments often determine the network of organizations within a set. The organization set also forms a context for the actions of organizations and the set's characteristics reflect the nature of the organization's environment. Aldrich (1976b) distinguishes the organization set from the organization network. In his terms an organization set refers

to those organizations with which a focal organization has direct links (Aldrich, 1976b). A network is defined as the totality of all the units connected by relationships of a particular type. Networks consist of all the ties connecting all the organizations within the limits of specified boundaries. In this study, however, set and network are used interchangeably. Boundaries are defined for the network of organizations considered and the remainder of organizations within these boundaries become the set of organizations for each focal organization.

The organizational dyad is often considered the smallest unit of interorganizational analysis. Molnar (1976) argues that it offers several advantages for investigation. First, interorganizational behavior is most directly and fundamentally manifested between two organizations. Interactions and contacts in their simplest form occur between two organizational actors. Secondly, dyadic interactions form the basis for examination of emergent properties. Aggregated linkages between organizations, two at a time, form set or field properties that can be used as contextual variables (Rogers, 1974b). Finally, Molnar (1976) demonstrated the utility of the dyad for analyzing the relationship between comparative and relational properties of organizations.

The aggregate of relations of a single organization with other organizations in its set remains a useful unit for analysis of interorganizational relations. Here the focus of attention is on the interorganizational relations of individual organizations. While properties

of emergent units beyond the single collectivity cannot be addressed, there are advantages in maintaining the identity of the organization in order to explore its contacts with other organizations. Furthermore, in view of the lack of theoretical and methodological progress concerning higher order units, the relations of the single organization may be the most advantageous unit to pursue at this time. This study will develop a formal theory of the process of power as a characteristic of the aggregate of relations of single organizations with the other organizations comprising their networks.

Formal theories

While there is considerable agreement that formal theory construction is essential for the progress of sociology, very few formal theories are extant in the literature.¹ And, to date, a formal theory of organizational power relations has not been developed. There are many definitions of a theory and each imposes certain constraints upon the process of theory construction (Hage, 1972).² Most agree that a theory is a set of propositions or theoretical statements (Zetterberg,

¹The terms "model" (Abell, 1971; Dubin, 1969) and "system" (Dubin, 1969) have been used interchangeably with theory.

²Different definitions of a theory are offered by Hage (1972), Zetterberg (1963), Gibbs (1972), Reynolds (1971), Abell (1971), Dubin (1969), Merton (1957), Homans (1964), Wallace (1971), Sjoberg and Nett (1968), and Warren, et al. (1977). The definition used here incorporates elements from a number of these authors.

1963; Reynolds, 1971; Gibbs, 1972). However, each emphasizes some different criteria for a formal theory. A theory is defined in this thesis as a set of interrelated propositions, with assumptions explicitly stated, that describes, explains and predicts. A theory is stated formally and is testable.

There are many modes of formal theory construction. Any one of which is no better than another if the objective of testability is realized. But it is important that the theorist expose the particular mode used to public scrutiny, so that its merits in terms of meeting the objective of testability can be assessed (Gibbs, 1972). The mode of formal theory construction used here will include: (1) identification of the purposes of a formal theory of organizational power, (2) delineation of the attributes of a formal theory of power and criteria for their development, and (3) presentation of criteria for assessing the formal theory of organizational power relations.

Purpose of a formal theory The purpose of a formal theory is to facilitate the attainment of the goals of science-prediction and explanation. Theories function to describe, explain and predict events.

Explanation can be contrasted with description. Whereas description informs of "what", explanation informs of "why" (Kaplan, 1969). Theoretical concepts describe, while explanation requires theoretical statements that link two or more concepts (Hage, 1972). Some descriptions can explain by providing knowledge of prior or intervening events in a causal sequence, but explanation adds to description by clarifying relevance and relationship. Reynolds (1971) argues that a sense

of understanding is a function of a theory in addition to prediction and explanation and that it is "provided only when causal mechanisms that link changes in one or more concepts (the independent variables) with changes in other concepts (the dependent variables) have been fully described." The advantages for explanation and understanding provided by organizing events as parts of a whole (pattern) and of rigor and precision of the relation between premises and the conclusion (deduction) are considered essential for theory building and testing (Kaplan, 1969). The view here is that explanation encompasses understanding which is accomplished when causal mechanisms linking concepts are fully described. Thus, the aim of this study is to explicate the causal linkages among dimensions of the process of organizational power in order to achieve an explanatory theory.

Prediction adds credibility to the premises and conclusions of a theory (Kaplan, 1969). Yet it is often the case that we have prediction without explanation and explanation without prediction. Knowledge of the whole and some parts does not always allow prediction of other parts. While a pattern may provide explanation, a range of possibilities exist that are only understood after the fact. Likewise, in a deductive model we may explain through delineation of necessary conditions, but fail to detail the sufficient conditions required for prediction. Conversely, we can often accurately forecast facts from other facts without achieving understanding of why the relationship exists, its specific form or intervening conditions.

Accurate sociological explanation and prediction is not a possibility with single bivariate or even multivariate statements of

relationship (Hage, 1972). Systematically organized and testable sets of statements or equations are needed to arrive at satisfactory explanation and prediction. This dissertation will develop a set of inter-related propositions to describe, explain and predict the process of organizational power.

The attributes of a formal theory It is important that an exercise to construct a formal theory include the theorist's claims regarding the attributes of a formal theory. These attributes can then be used as criteria by the theorist and others to assess the process of theory construction. If the theorist states his criteria, a better opportunity for consensus is also provided.

The attributes of a formal theory that will be used to construct the theory of organizational power were selected from a number of sources (Hage, 1972; Reynolds, 1971; Wallace, 1971; Gibbs, 1972; Dubin, 1969; Zetterberg, 1963; Warren, et al., 1977) and include: (1) level of abstraction, (2) unit of analysis, (3) concepts, (4) statements, (5) theoretical and operational linkages, and (6) ordered and interrelated statements. The remainder of this section discusses each attribute and its role in the construction of a formal theory of organizational power relations.³

³The language of formal theory construction is complex and diverse. Terms are used that often have overlapping meanings. Synonymous terms also exist for the same meaning of a single term may be used by different authors with different meanings. The reader is cautioned to confine terms and their meanings to the definitions provided.

Level of abstraction Reynolds (1971) suggests that there are three characteristics that are desirable of scientific knowledge: (1) abstractness, (2) intersubjectivity, and (3) empirical relevance. Level of abstraction refers to the relative freedom from location in time and space and the degree of scope or generality of concepts and units included in a theory. The more abstract a concept is the more it is free of being fixed at a specific time and place and the more coverage of meaning it possesses. A nonabstract or empirical concept is concrete or specific to a particular time and place and covers a very narrow range of meaning. Organizational power is a highly abstract construct. As such, power relations of organizations have resisted efforts to develop a theoretical definition that has useful generality and that at the same time allows development of empirical indicators. Intersubjectivity and empirical relevance have not been characteristic of knowledge about organizational power. This problem is discussed at some length in Chapter II. For that reason it is only noted in passing at this point that there is little consensus regarding conceptions of social and organizational power. Competing conceptions have left a legacy of vagueness and ambiguity, hardly the conditions needed for intersubjectivity and empirical relevance.

The process of theory construction requires that the theorist work almost simultaneously at different levels of abstraction. The aim of this study is to bring the conceptual (highly abstract) and empirical (nonabstract) worlds of organizational power together in a manner that corrects some of the problems noted in Chapter II. The process used

to construct the theory of organizational power thus includes both abstract and empirical levels of analysis (Gibbs, 1972; Hage, 1972).

Thus, the total process of theory construction will entail movement in both directions with the ultimate aim of constructing a theory of organizational power with concepts that have as much scope and generality as possible and that are also measureable at the empirical level, allowing a test of the propositions and theory. The degree of intersubjective agreement at both the conceptual and empirical levels will ultimately determine the theory's adequacy as a contributor to scientific knowledge.

However, the premature search for a single highly abstract general theory to explain all sociological facts and relationships has been criticized (Merton, 1957). Merton argues for "theories of the middle range." These theories are formulated at a middle range of abstraction, contain concepts that are clearly defined and operationalized which are included in statements of relationship for phenomena of less scope and generality than the grand theories. Middle range theories are abstract but the relationship of the concepts contained within them with their empirical indicators are clearly specified. In Merton's (1957) view a focus on testable theories that embrace phenomena of limited scope and generality can eventually result in their integration into more abstract and general theories. For this theory construction exercise movement across levels of abstraction will be disciplined by the belief that at this point in time a theory of power at a middle range of abstractness is most advantageous.

Unit of analysis Theories are built to describe properties of things rather than the things themselves (Dubin, 1969). These things, which have descriptive properties, are ordinarily called units of analysis or analytical units. The construction of a formal theory that is testable requires that the unit of analysis be defined consistently at the theoretical and operational levels (Gibbs, 1972; Hage, 1972). The unit of analysis of the theory developed here is the relations of organizations in a network. In succeeding chapters consistent theoretical and operational definitions of the analytical unit are presented to facilitate testing.

Concepts Theories are constructed most fundamentally from concepts as basic elements. In general, concepts point to or denote phenomena of interest, "ideas" or "notions". The names of concepts serve as symbols for which meanings are shared. It is through the use of concepts (meanings linked to symbols) that we are able to communicate ideas and describe phenomena of interest. Thus a concept includes a name or term, a theoretical definition and an operational definition (Hage, 1972).

Concepts are units of thought smaller than propositions and theories. Concepts are linked together to form propositions. Propositions are interrelated to form theories. Concepts can be thought of as valid or invalid, applicable or inapplicable, useful or useless. Propositions or theories are thought of as true or false, verified or falsified.

The most efficient way to start the construction of a theory is with theoretical concepts that characterize the phenomena of interest

(Hage, 1972; Reynolds, 1971). Thus, Chapter II begins with an explication of the power construct whereby concepts that comprise the power process are labelled and theoretically defined.

Concepts can be more or less abstract and they can be of two types; variable and nonvariable. Variable concepts characterize dimensions of phenomena (Hage, 1972). Nonvariable concepts are sources of variable concepts and are useful for labelling units of analysis. However, variable concepts are more crucial for theory building because they represent continua, are general, are more precise and provide more information about phenomena. Concepts that comprise the power process will be conceived as variables in order to move to the development of statements or propositions about the variation of organizations regarding the process of power. Whether or not the concept is variable or nonvariable, multidimensional or unidimensional and the level of measurement will be explicated at the theoretical level so that relationships among concepts can be accurately proposed and empirical indicators found that validly represent the concepts for measurement and testing of relationships.

Statements Theoretical statements connect two or more theoretical concepts (Hage, 1972). Just as there are different kinds of theoretical concepts there are also different types of theoretical statements. And there are a number of names used for theoretical statements; i.e., proposition, axiom, theorem, hypothesis, assumption, premise, corollary.

Theoretical statements are a necessary element of a theory because they make it possible to move from the description provided by

theoretical concepts to explanation and prediction provided by statements of relationship between two or more concepts.

Concepts can be linked in various ways and it is the types of linkages in theoretical statements that have implications for theory building. Linkages can be continuous or discrete. Discrete linkages result in either-or type theoretical statements which are ordinarily used for logical premises or assumptions. Continuous linkages result in theoretical statements that permit mathematical manipulations; i.e., addition, subtraction, multiplication, and concepts can be connected with constants, powers and coefficients (Hage, 1972). These mathematical manipulations or forms of connections are not possible when linkages are discrete. The statement, "Power is a characteristic of the relations among organizations," contains a discrete linkage. "The greater the power advantage an organization has in its interorganizational relations, the less its environmental uncertainty," is an example of a theoretical statement that contains a continuous linkage.

Progress in the construction of theories that contain theoretical propositions of sufficient complexity to validly reflect real world social phenomena depends primarily on theoretical statements with continuous linkages. Continuous theoretical statements have several advantages to this end. They are more precise, contain more information and are more complex. Continuous linkages provide information about change in one or more variables associated with change in others. Except for the statement of assumptions continuous statements will be developed in this study in order to more accurately map the complexity of the process

of organizational power.

Theoretical and operational definitions Theoretical concepts are composed of three parts: a name, a theoretical definition and an operational definition (Hage, 1972). Theoretical definitions specify the meaning of a theoretical concept. Operational definitions set forth the procedures to measure the concept. Once theoretical statements are formed with continuous linkages among variable concepts, the focus of concern becomes one of clarifying the meaning of the concepts and specifying the empirical indicators that represent the theoretical meaning space. The quality of the relationship among concepts or ideas of real world properties, empirical indicators or measures of these properties and the real world phenomena which both represent is the fundamental criterion for assessing the adequacy of theoretical and operational definitions. There must be a "good fit" among all three.

In summary, theoretical and operational definitions of concepts comprising the process of power are essential for the development of a testable theory of organizational power. It is the aim of this dissertation to provide both definitions for accurate meaning and measurement. This dissertation will apply these criteria in Chapters II and IV to assure the empirical applicability of concepts, one necessary step in the construction of a testable theory (Gibbs, 1972).

Theoretical and operational linkages The importance of locating theoretical continuous statements has been noted. However, verbal theoretical statements, whether they have discrete or continuous linkages among concepts, are relatively contentless until the precise

way in which concepts are linked together is elaborated. This is accomplished by specifying theoretical and operational linkages. The theoretical linkage supplies reasons why concepts are linked a certain way and the operational linkage describes how they are linked (Hage, 1972).

Thus the construction of the formal theory of organizational power will focus on identifying and developing theoretical continuous statements with theoretical and operational linkages specified. Chapter III contains the theoretical propositions and discussion of theoretical linkages. Empirical hypotheses and the discussion of operational linkages are presented in Chapter IV. An attempt will be made to think through the nature of the relationship in sufficient detail to accurately represent the relationship of interest.

Ordering Statements In Chapter III theoretical statements are ordered into an interrelated set to form a theory of organizational power. Assumptions are stated which contain the premises for the theory (Hage, 1972). Less general corollaries are derived, which together with the assumptions, describe, explain and predict the process of power relations. First, theoretical equations (statements and linkages) are developed and ordered. Second, less abstract statements containing operational concepts and linkages are developed and ordered consistent with the theoretical equations.

The method of ordering or interrelating statements for this thesis is causal modeling. For this purpose it is useful to assume an underlying deterministic relation between variables (Abell, 1971).

Deterministic causal relations are asymmetric and transitive and the interrelated causal model is a linear recursive system. Furthermore, it is assumed that if A causes B, A is a sufficient condition for B within the context of initial conditions defined.

Both causal and noncausal connections are assumed to occur in the real world. However, cause is considered a useful way of thinking about the process of organizational power relations to construct a theoretical model and to maintain consistency with empirical propositions to test the model. Abell's (1971) notion of conditional cause is adopted. The concept of conditional cause includes a set of initial conditions for the causal connections. The conditional causal notion allows the investigator to avoid the trap of classical determinism and to construct models more consistent with the complexity and voluntary nature of social phenomena. It is possible for behavior to be caused and remain intentional and voluntaristic. The key concern is the nature of the set of initial conditions. Cause, tied with alternative conditions, opens up alternatives of rational choice for behavior. To show that action is caused, given one set of initial conditions, does not mean that another action could not have been selected, given a different set of initial conditions. Specification of causal connections with a set of initial conditions actually contributes to the rationality, rather than irrationality, of behavior. Consequences of specified alternatives are explicated which provide a greater number of choices for rational action. The view presented here is that, given a set of initial conditions, the process of power is a sequence of

causal relations among concepts included in the basis, exercise and manifestations of power. Explication of these causal relations among the dimensions of the power process is reasoned to be a major improvement over approaches to analyses of power that ignore the complexity of ordered relationships comprising the power dynamic by lumping all aspects of its meaning in unidimensional conceptions. Traditional conceptions of power as influence, reputation and decision-making illustrate the simplistic approach (Dahl, 1957; Hunter, 1953), while later conceptions of power as a multidimensional process represent a move toward a view of power as a process of causal relations (Olsen, 1978; Burt, 1977).

Criteria for assessing the formal theory Several criteria will be used to assess the formal theory developed in the remaining chapters. All are encompassed by Gibbs' (1972) notion of predictive power as the ultimate criterion for assessing a theory. The criteria are: (1) testability, (2) parsimony, (3) scope, (4) accuracy of prediction, and (5) accuracy of explanation.

Testability refers to the extent a formal theory has been prepared to allow its subjection to empirical observation and analysis. Has the theorist presented a theory that is empirically applicable? Can it be tested with reasonable effort? Potential testability can be assessed by noting the adequacy with which each attribute of the theory is developed. But the ultimate criterion will be the number of actual tests of the theory that are conducted in comparison to some other theory (Gibbs, 1972).

Parsimony refers to the number of assumptions that are made in the development of theoretical statements. A theory that makes few assumptions is a powerful theory. Parsimony entails maximum explanation with minimal assumptions and conceptual unknowns (Hage, 1972).

Scope measures the range, generality or informative value of a theory (Hage, 1972; Reynolds, 1971; Gibbs, 1972). A theory that can embrace a large number of issues and problematics of a discipline is a theory of large scope. The theory developed in this exercise is one of the middle range (Merton, 1957). Consequently, it will address a limited number of issues. It is expected to be of medium scope.

Sociological theories that predict accurately are likely to be very rare until sets of equations and extremely complex multivariate propositions are available for testing. Yet accuracy of prediction is an objective of theory development and can be increased by more adequate conceptualization of concepts and linkages and the development of epistemically correlated measures and analysis procedures. Accuracy of prediction is an important criterion for assessing a formal theory (Hage, 1972; Wallace, 1971).

Accuracy of explanation is the validity or truth of a theory. The adequacy of theoretical premises and linkages among concepts along with empirical tests of relationships will do most to provide understanding of how and why events occur in a particular sequence. The aim of this study is to construct a theory of organizational power that explains and which can be tested to assess its validity or resistance to refutation (Hage, 1972).

Significance of the Problem

Organizations have become increasingly useful to society, but they have also grown in size, complexity and interconnectedness. And they have been accorded a legal status akin to that provided the individual citizen with corresponding rights and responsibilities (Coleman, 1974). As a result, organizations have become significant actors in power processes which affect social control, social change and resistance to social change.

Certainly organizations will continue to grow and become more dense and interrelated. Broadened patterns of organization will continue to emerge from these relationships to impact other units of social life. Some scholars hold the pessimistic view that as this occurs, organizations and their interrelationships will totally dominate societal and intersocietal life, subordinating individual needs and desires to the detriment of quality life (Perrow, 1972; Hall, 1977).

Power is viewed as a core dynamic in social ordering and organization. Neither are possible without power (Bierstedt, 1950). Power processes are inherent in all organized social life (Hawley, 1963). Thus power processes influence the emergence of all units of social organization. The primary significance of the research problem is the need to explicate the process of organizational power in order to understand its role in the emergence of interorganizational relationships. The specific intent is to elaborate the process whereby organizations attempt to manipulate their power relations in order to control the

threats posed by uncertain environments. The influence of power in interorganizational relations nor the emergence of new relations of power cannot be understood unless the power process itself is analyzed. Antecedents and consequences of the power process also cannot be explored that have implications for the internal structuring of organizations. Likewise, explanation of the consequences of distributions of organizational power require understanding of the process of power. The problem, therefore, involves development of a formal theory that explicates the bases, exercise and manifestations of the process of organizational power.

While traditional sociology has been strongly oriented toward theory, there has been a paucity of interest in formal theory construction (Gibbs, 1972). Formal theory construction has been criticized as not improving substantive significance, for generating propositions that have little substantive significance, and for not insuring empirical applicability. However, formalization surely cannot in itself make a theory insignificant. And lack of substantive worth should be more quickly revealed when subjected to the criteria of a formal theory construction process. Formal theory construction requires that concepts and relationships be specified so that accurate measurement and testing can be accomplished. Theories that are not stated formally are likely to remain untested because they are allowed to contain ambiguous concepts with measurement procedures unspecified. Existing theoretical and empirical analyses of power unquestionably illustrate this assertion. The formalization of a theory of organizational power with systematic ordering of statements that are phrased in a way that invites

empirical refutation, should enhance testing and explanation of organizational power relations. A further significance of the dissertation problem is the need to develop a formal sociological theory of organizational power relations.

Contributions of the Thesis

The main contributions of the thesis are summarized. First, a formal theory of organizational power is constructed. While many suggest that formal theories are needed, few examples are extant in the literature. To the writer's knowledge no formal theory of organizational power exists. It seems apparent that progress in the study of organizational power awaits efforts directed at organizing concepts and propositions describing the power process into an interrelated set that can be subjected to empirical test. The relationship of the process of power to other aspects of social organization cannot be examined until the power process itself is analyzed. This thesis contributes to the study of organizational power by applying techniques of formal theory construction to develop a theory of the process of organizational power.

Second, previous approaches and conceptualizations of social power and organizational power, specifically, are reviewed. Views of power are assessed and integrated into a conceptualization of organizational power as a process. The theoretical synthesis should add to an ability to explain organizational power process. The process of organizational power is viewed as a manifestation of the process of social organization, a view of power process that has received little attention in

recent years (Olsen, 1978).

Third, organizational power is conceptualized as a multidimensional process. The meaning of power has been vague and has tended to have no meaning apart from the meaning of social organization. Its meaning as a process which contributes to all social phenomena has not been described. Furthermore, power is a highly abstract concept that cannot be measured directly. Hence measurement of social power has been problematical. The approach to conceptualization used in this exercise provides better specification of the meaning of organizational power. The thesis will present operational procedures to guide the selection of empirical measures which reflects the better specification of meaning of the process of power. Explication of the multidimensional nature of power will also allow assessment of a multiple indicator approach to measurement.

The view of organizational power, as a process and an abstract construct, argues that power is best reflected in a multidimensional causal measurement model or theory. This approach is intended to contribute concepts and measures of the power process which are needed to advance the development of theory. Furthermore, a multiple indicator approach to measurement of the power process is advocated and illustrated as an approach that has important advantages for efforts to capture the multidimensional scope of highly abstract concepts in empirical analysis.

Fourth, propositions (statements) linking variables (concepts) included in the dimensions of the power process are developed. Theoretical and operational specification of the linking relationships of the

variable concepts are described. This thesis will contribute to the clarification of the character of linkages among concepts, theoretical and operational, so that appropriate tests of the theory can be performed.

Finally, the thesis contributes a causal interpretation of inter-organizational power relations to explain the interaction strategies that organizations select to gain a power advantage or balance power-dependence relations with other organizations in attempts to control environmental uncertainty. This is an important contribution to understanding how organizations gain or lose power in a network and to understanding the role of power relations in shaping the nature of interorganizational interactions. The thesis specifically seeks to clarify the circumstances of power relations that determine the selection of cooperative versus conflicting interactions by organizations in a network.

Outline of remaining chapters

The concepts of social power and organizational power are explored in Chapter II. A theoretical definition of organizational power is presented as a property of an organization's relations. Theoretical definitions of other properties of organizational relations that are explicated as the process of organizational power are also presented.

Theoretical statements are developed to explain the process of organizational power in Chapter III. Assumptions for the formal theory are stated and continuous statements are deduced. Finally, the theoretical linkages of all the statements are discussed and concepts are related in a causal sequence to form an interrelated set of explanatory

statements.

Chapter IV is devoted to the development of operational definitions of the concepts to guide the selection of empirical indicators. Assumptions for measurement of the concepts are described and major measurement issues and problems are discussed.

Operational linkages are clarified and the appropriate methods of analysis are also described in Chapter IV. The results of the analysis are reported in Chapter V. Implications and a summary of the dissertation are presented in the final chapter.

CHAPTER II. THEORETICAL DEFINITIONS OF MAJOR CONCEPTS

Introduction

This chapter presents the concepts which are used to construct the theory of the process of organizational power. The focus of the chapter is on establishing the meaning of concepts through the development of theoretical definitions. Relevant literature is discussed as the concepts are introduced and defined. First, organizations are defined conceptually. The discussion then turns to a review of approaches to conceptualization of social power. Next organizational power is defined theoretically. Organizational power is treated as a multidimensional concept that cannot be directly measured. The process of organizational power is broken into three dimensions - the basis, exercise and manifestations of power. Theoretical definitions of the dimensions of the power process are presented and less abstract concepts included in each dimension are analyzed. Figure 2.2 contains the dimensions of the power process and explication of concepts central to each dimension. References will be made to Figure 2.2 throughout the narrative so that the reader can better follow the theoretical elaboration of the power process. Finally, theoretical definitions of concepts subsumed by the basis, exercise and manifestations of organizational power are presented.

Organizations

Organizations are distinguished conceptually from the broader term of social organization. Blau and Scott (1962) conceive of social organization as the "network of social relations and shared orientations ... social structure and culture, respectively." Organizations are a part of this broad set of relationships and processes. Some have tried to distinguish organization from social organization by using terms such as complex organization, bureaucratic organization, large-scale organization and formal organization (Blau and Scott, 1962). Because these defining terms can be misleading in that organizations can vary in size, complexity, degree of formalization and bureaucratization; the term organization is preferred for this study (Hall, 1977).

Etzioni (1969) defines organizations as "social units deliberately constructed and reconstructed to seek specific goals." According to Etzioni, organizations are characterized by: (1) a division of labor, (2) a power center(s), and (3) substitution of personnel. Scott (1964) adds that organizations are "collectivities" established to pursue specific goals on a "more or less continuous basis with fixed boundaries, a normative order, authority ranks, a communication system and an incentive system which enables various types of participants to work together in the pursuit of common goals."

For this study, organization refers to a collectivity that has a division of labor and systems of communications, coordination and authority relations purposefully created to realize specific goals (Hall,

1977; Scott, 1964; Etzioni, 1964). As such organizations are interaction systems that are relatively permanent, but are also semi open-systems that grow and change due to interactions with environmental elements (Hall, 1977; Haas and Draybeck, 1973). The definition distinguishes organizations as a unique unit of social organization. Small groups do not have formal relations of authority. Communities and societies are not purposefully organized to attain specific goals.

Organizations are real actors or entities (Warriner, 1956). Organizations have characteristics of their own apart from individuals in them which in turn affect the behavior of individuals as well as organizational decisions (Hall, 1977). Organizations have a life of their own that continues after individual members leave and are replaced (Durkheim, 1933).

While this view of organizations includes elements of open-systems, resource dependency, exchange and political economic models, it emphasizes the effective, as opposed to adaptive responses of organizations' relations with their environments.

Open systems perspective stresses the importance of the environment and is critical of traditional closed system models (Katz and Kahn, 1966). The model is an attempt to avoid a focus on organizational goals by examining the processes of inputs, throughputs and outputs that are true of all organizations and how they operate. The open-systems perspective stresses that environmental factors affect organizations from two directions. Inputs are received primarily from the environment and are processed as throughputs to become outputs. The

outputs are then sent back into the environment where they are consumed, utilized and evaluated in the environment (Hall, 1977).

The natural-system model, which precedes and contains the roots of the open-systems perspective and largely corresponds to it, views the organization as a "natural whole" for which the realization of goals is but one of several needs to which the organization must attend (Gouldner, 1959). One important need is survival which tends to subvert the importance of rational goal seeking. Organizational actions are viewed as relatively unplanned adaptive responses to environmental uncertainties that threaten survival.

Resource dependency, political economic and resource exchange models are all generally subsumed by the open-systems approach (Aldrich, 1976a&b; Benson, 1975; Cook, 1977; Levine and White, 1961). These models view organizations as rational, goal-seeking actors that interact and adapt to critical environmental contingencies in order to realize their goals. All view organizations as primarily adaptive, however, the resource dependency and political economic models focus on power as a critical factor in the organization's ability to deal with its environment.

Organizations are conceptualized as semi-open systems which interact with environmental elements (including other organizations) in order to acquire resources needed to achieve their goals for survival. Thompson (1967) argues that environmental uncertainty is a major problem for interdependent organizations and that organizations interact to make acquisition of resources as predictable as possible. Resource dependencies become constraints or contingencies that the organization must deal

with rationally in order to maintain a power advantage or to avoid the power advantages of others. Organizations select strategies for adaptation to or control of environmental contingencies that will increase the certainty of their environments and thus make it easier for organizations to act rationally for goal attainment.

The conceptualization presented here recognizes that organizations are rational and goal-seeking and includes the important influences of environmental elements, particularly relations with other organizations, on organizational actions. Furthermore, the conceptualization stresses that organizations are not moved about helplessly by environmental contingencies. Rather, the argument is that, contrary to the prevailing view that organizations respond adaptively to their environments, organizations also respond effectively to environmental factors in order to shape or control them to their advantage (Metcalf, 1976; McNeil, 1978). This leads to an examination of interorganizational power relations. The central argument is that organizations seek to maintain as much power as possible relative to other organizations in their immediate environments in order to reduce environmental uncertainty and that power relations is one factor that influences the strategies of interorganizational interaction that are selected to do so.

The manipulation of power relations is seen as a way of managing environmental contingencies of interdependence. The more general view is that organizations select specific strategies depending upon their power relations in order to reduce environmental uncertainty. While

Thompson (1967) refers to cooperative strategies as means to gain power, the approach for this study broadens the conception of power as a process that includes cooperation as one of several strategies that are used by organizations to gain or balance power relations to improve the certainty of their interorganizational environment.

Social Power

There is general agreement that social power is an important concept for study of human organization (Mott, 1970; Olsen, 1970; Bierstedt, 1950). Yet few concepts seem to have so successfully eluded consensus regarding their meaning. Power remains one of the most difficult sociological concepts to define and measure (Duke, 1976). While most agree that power is some form of energy (Mott, 1970; Olsen, 1978) and stress that power is the ability to influence social action (Olsen, 1970), the consensus seems to end there. Power is defined by some as an attribute of individuals (Goldhammer and Shils, 1939) by others as a property of a relation (Emerson, 1962; Dahl, 1957) and by others as a characteristic of social organization (Mott, 1970). Lack of consensus regarding the nature of social power centers on such issues as: (1) the unit that power characterizes, (2) whether power is a capacity for action or actual behavior, (3) the conceptual classification of power and other related concepts - force, dominance, authority, attraction, control, and (4) whether power is symmetrical or asymmetrical, zero sum or nonzero sum, commodity or generalized capacity or situation specific.

A basic assumption in this thesis is that social power is a process inherent in all social organization (Olsen, 1978). Social power

is a property of relations among actors - individuals or organizations (Adams, 1975; Emerson, 1962). As such the process of social power is a highly abstract concept which includes several types - influence, force, dominance, control, authority and attraction. Social power is viewed as a general characteristic of social relations among actors. It is a process that entails outcomes of the relative control of valued resources by actors, mobilized to effect their social goals.

Olsen (1978) argues that power is a relational property that can be exercised by individuals or organizations. He distinguishes interpersonal from interorganizational power processes. The interpersonal perspective emphasizes a person's power to influence the behavior of others in accordance with his own intentions. The interorganizational perspective, according to Olsen (1978) focuses on "the generalized capacity of a social system to get things done in the interest of collective goals." Lehman (1969) conceptualizes "intermember" and "systemic" power. Gamson (1968) distinguishes the "influence" perspective from the "social control" perspective of social power. The view presented here is that a general conception of social power must include both notions; of intermember influence and of actions to meet social goals. Intermember power takes on the added dimension, "systemic" or "generalized" power, when collective units are the actors involved. It appears that Olsen (1978) equates social control within an organization with systemic power, when he asserts that power in its systemic form refers to the "capacity of some unit acting as an agent of the system to overcome the resistance of members in setting, pursuing and implementing collective goals." The view presented in this study incorporates

intermember and systemic notions in the conception of the process of organizational power.

Approaches to the study of social power

There are two general orientations to the study of all sociological phenomena and these orientations are reflected in two major approaches to the study of social power. Dahrendorf (1959) identifies the two metatheoretical perspectives as "coercion" (conflict) and "consensus" (cooperation). The coercion perspective focuses on differences among actors regarding interests, resources and values. These differences cause mutual dependencies which in turn promote social ordering. The consensus orientation highlights similarities among actors in activities, interests and values which give rise to consensus. According to this orientation, ordering flows from shared commitments.

The dependency approach to analysis of social power reflects the coercion orientation and stresses differences among actors with power residing in the mutual dependency of social relationships (Emerson, 1962). Actor A exercises power over actor B to the extent B is dependent on A for resources mediated by A. Power is viewed as the obverse of dependence and the power of A over B is expressed in the equation $P_{ab} = D_{ba}$. Force and dominance forms of power fit best within the dependency approach to power analysis (Olsen, 1978).

Parsons (1963) is the principal advocate of the trust approach to social power. In this view norms of trust emerge from shared common values - actors' beliefs that other actors will behave in ways beneficial to them. The basis of power is the investment of trust in other

actors and the relationships that bind them together. Authority and attraction forms of power are conceptually most consistent with the trust approach to analysis of social power (Olsen, 1978). Olsen (1978) suggests that these two approaches to social power analysis are not necessarily incompatible and that a theoretical synthesis of the two approaches would further the ability to explain the process of social power. While there is some attempt to fuse the two approaches, the theory presented in this study is oriented primarily by the dependency approach.

The view of organizational power presented in the following sections is derived from the abstract notion of social power as pervasive in all social organization. While the process of organizational power is also an abstract conception, it has less scope than the conception of social power. The scope of the theory of organization power will be middle range, narrowed by the specific nature of the power process as a characteristic of organizational power relations.

Dimensions of power

There are four aspects of power that have received the most attention in sociological literature. Most agree that the power of an actor depends on position, reputation and selected traits (Mott, 1970; Laumann and Pappi, 1976; Marsden and Laumann, 1977). Power as possession of traits (resources) is a common conception. The argument is that power is the possession of resources (Burt, 1977a; Bierstedt, 1950) or that power is a function of resources committed and encountered (Olsen, 1970).

Power as position is also often the focus of analyses of power relations. Power is viewed as a function of an actor's location in a social network. Structural arrangements are emphasized which give actors in a system varying access to or constraint over rewards. Power is also often viewed as reputation or the perceptions that other actors hold about an actor's potential influence (Mott, 1970; Burt, 1977a). The conception of power as potential for influence underlies this approach.

Power through reciprocal obligations is a conceptual approach advanced by Emerson (1962) and Blau (1964). The focus is on power-dependence relations that emerge from the development of obligations incurred by actors in exchange relationships. Actors who receive resources from other actors must comply with the requests of those who provide resources if there is an inability to reciprocate with like resources.

Burt (1977a) argues that there are three aspects of power in a system of actors; power as possession, power as control and power manifested in the relations of influence. The view presented here also distinguishes three aspects of the power process. However, the power-dependence approach (Emerson, 1962; Blau, 1964) is integrated into the three aspects. Approaches that emphasize distribution of resources and macroapproaches that analyze the location of actors in a network of actors are articulated in a single conception. The power process is conceptualized as including the basis of power-dependence relations, the exercise of power and the manifestations of power in relationships.

The basis of power-dependence relations is the relative ability to control relevant resources which encompasses conceptions of the comparative resources possessed, the structural location of actors in a system and the availability of alternative sources of resources. In this view types of power reflect the nature of resources that are controlled to form a basis for power. For example, reputation for influence is considered one of a set of traits that can be a valued resource for organizations in determining power dependence relations. Power exercise is viewed as the relative ability of actors to convert resources for action and includes Emerson's (1962) conception of the extent motives are invested in relationships, Blau's (1964) notion of the obligations incurred and Olsen's (1978) concept of the capacity of actors to coordinate their subunits for action. Manifestations of power are the outcomes of power relations which include interaction strategies selected as a function of power-dependence relations, prestige and effectiveness.

Organizational Power

Organizational power is a property of relations among organizational actors.¹ Power characterizes organizational relations as the extent of ability of actor A to control and mobilize resources for goal attainment relative to the ability of actor B or a set of actors, B, C

¹Unless otherwise specified, the term, actor, will refer to an organization throughout the remainder of the dissertation.

and D to control and mobilize resources for its goal attainment (Olsen, 1978). Power is not an attribute of individual actors in isolation (Emerson, 1962; Cook, 1977). Rather it is a quality of their social interaction. To say that "actor A has power" is not meaningful unless A's power is specified in relation to some other actor B or actors B, C and D.

Organizational power is based on the control and mobilization of resources that actors need to meet their goals (Korsi, 1974). It is the capacity to convert valued resources for influence to manage and direct events of interest and is tied to the types of events that are relevant to goal attainment. Thus organizational power is a property of relations that describes a dimension of equality among actors which is reflected in the relative amount of control each actor has over commonly needed environmental resources and the relative ability to mobilize these resources to meet organizational objectives.

Organizational power is a dynamic relational property with reference to things external to an actor; the control of environmental resources upon which actors, party to a relation or relations, bestow equivalent value. Anything valued can become a basis for the development of power. Things are converted into or mobilized for preferred action when control over them is unequally distributed, when they are needed and valued by other actors and when availability is limited. In this sense power is viewed as the ability to effect preferred social action. It involves at least two actors that possess resources

that can be used by one another to realize their interests.²

It is assumed that in a system of actors where each exists socially in reference to each other actor in the system, and where actors value the same resources, that power is unequally distributed among the actors (Burt, 1977a). And it is assumed that each actor will act to control and possess resources which will enhance the probability of its survival. Thus it is also assumed that actors will vary in their relative ability to achieve goals and that some will prevail over others in the selection of actions to achieve goals. The situation where actors are not interdependent concerning the control of valued resources, i.e., each actor is in full control of resources needed for survival; is not of interest in this discussion of power (Coleman, 1977).

²No distinction is made between potential or actual influence; direct or indirect influence. The conception of power presented here is a process that includes dimensions of development, exercise and manifestation of potential and actual, direct and indirect influence. An actor (A) can prevail over another actor (B) in the selection of actions to enhance A's goal achievement because of latent capacity or actual ability to convert resources directly as well as indirectly. Actors assess one another's abilities and adjust actions accordingly. The dependence of actor A on actor B or the need of A for resources controlled by B constitutes the potential for influence of B on A (Emerson, 1962; Adams, 1975; Rogers, M. 1974). Potential influence is latent or indirect, but it has actual effect on A's actions. However, the power process can also include direct influence exerted by B on A actions. A distinction can be made between possible and probable influence (Wrong, 1968). Actual influence is the extent that B's wishes prevail over A's and alter A's behavior, but it is exercised only if a demand is made by B. B's potential influence may nonetheless alter A's actions without a demand being made by B. This is latent influence. But in order to do so potential influence must be latent or probable and not merely possible influence. B's control of resources must be valued by A and A must realize B's capacity of control over resources (Wrong, 1968).

As a property of a relation between two or more actors, power is a continuing process. The power relation can be symmetrical (A and B have equal ability to achieve goals) asymmetrical (either A or B have greater ability to achieve goals) or it can be symmetrical and asymmetrical at different points in time of the continuing relation.

Organizational power as a relational property

Emerson (1962) argues that the implicit treatment of power as an attribute of a person or group is a recurrent conceptual flaw. This view leads to analysis of "who has power?" within a social system and assumes that power is a generalized characteristic. While A may have power over B and C, A may be dominated by D and E and B may dominate D. Clearly, it is readily observable in everyday experience that power relations are often intransitive. Thus, power is a property of a social relation (Emerson, 1962; Adams, 1975; Cook, 1977) - a quality of social interaction. These social relations involve mutual dependencies (Emerson, 1962). When actors are mutually dependent, they have need to influence one another and each is at least partially able to facilitate or constrain the other's goals achievement. Thus power resides in the control each has over resources valued by the other and their relative abilities to convert these resources for goal attainment (Adams, 1975; Emerson, 1962).

The dynamic and continuing character of the power process and its potential for symmetry as well as asymmetry is illustrated in Figure 2.1 adapted from Adams (1975). The ability of A or B to control and

convert X relative to one another, illustrates the basis and exercise dimensions of the power relation. It determines the symmetry or asymmetry of the relations and the changing dynamic of the relation over time in terms of the particular X of value. If A has more control and ability to convert X than B, or vice versa, the relationship is asymmetrical. If A and B have equal control and ability to convert X the relationship is symmetrical. In the conception presented here, the power of an actor relative to all other actors in a system of actors is an aggregate of the actor's differential with each other actor in the system regarding dimensions of control and conversion of resources.

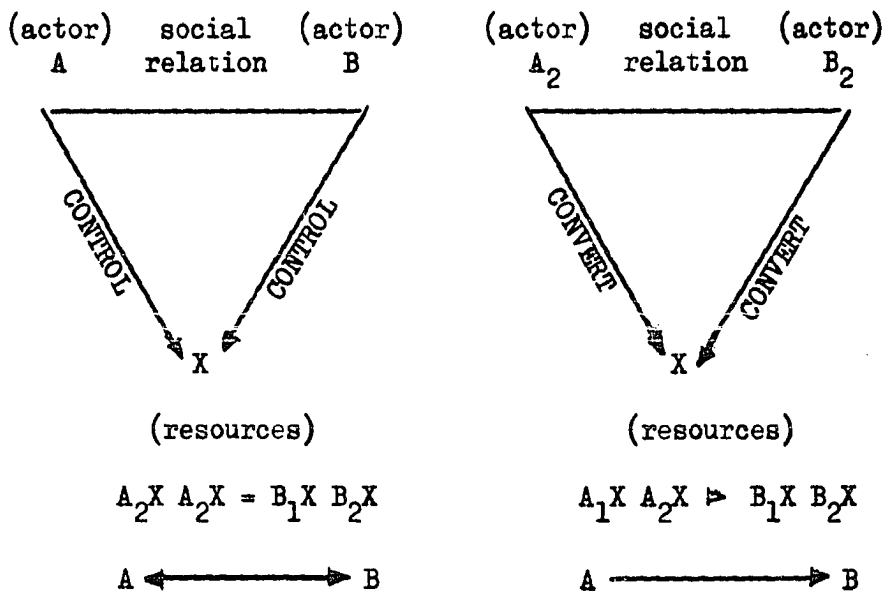


Figure 2.1 Basic components of the power process

Organizational power, control and influence

It is important to distinguish power conceptually from control. Control generally is a nonreciprocal process while power is reciprocal.

Control can refer to physical, nonsocial objects as well as to social actors as objects. With social control, objects of control are social actors, outcomes are largely predetermined and objects of control have little or no ability to counter (Olsen, 1978). The power relationship is based on patterns of controls and actors act in terms of their controls in a power relation (Adams, 1975). Furthermore, there are forms of social control that do not involve a power relation; i.e., actors behave in accord with internalized norm (Wrong, 1968). Power as intentional manipulation of bases of control to gain further social control, should be distinguished from the many forms of social control exercised by collectivities over socialized individual actors (Wrong, 1968). Organizational control and influence are seen as a continuum of the determination and outcomes of power where influence is the exercise of power where outcomes are not predetermined (Olsen, 1978).

Organizational power, force, dominance, authority and attraction

Etzioni's (1975) typology of power distinguishes three types of power; normative, coercive, utilitarian; which are based on different types of resources. Olsen (1978) similarly treats power as a generic concept with force, authority, dominance and attraction evolving as types of power that rest on the nature of resources controlled. The resources that must be controlled for actor A to use force or coercion have to be total in terms of actor B's survival. In other words actor B is completely dependent on A and has no available recourse. This can occur only if A intentionally commits his control of resources totally to back up his demand on B (Olsen, 1970) or if political processes eliminate

alternatives (Blau, 1964).

To use authority an actor must be granted legitimacy for the right to make demands on other actors. Legitimacy then becomes the actor's resource base for social power. Legitimacy can be granted formally as through voting or assuming a position in a formal organization, or informally by consent or agreement to follow those who claim legitimacy. Legitimate authority ordinarily rests on: (1) institutionalized values and norms, (2) legal prescriptions, or (3) special skills and knowledge relevant to a specific circumstance (Olsen, 1970). According to Dahrendorf (1959) legitimacy is the most prized scarce resource for actors, because legitimacy reconciles losers in a power struggle to their disadvantaged position. Domain consensus reflects cultural integration among organizations and is important in explaining outcomes of interorganizational systems (Molnar, 1976). Domain consensus reflects attribution of legitimacy by other organizations regarding an organization's own claims and intentions (Warren, et al., 1964).

Dominance differs from force in that it is unintentional and does not require the commitment of additional resources to back up demands. Dominance flows from the regular functional performance of roles. Thus the base of resources for dominance is the actor's ability to perform his roles without drawing on additional resources, such as withholding services or access.

Appeal or liking is the resource base for attraction and commonly is derived from positive affection, charisma and cognitive identification (Olsen, 1978). Actors comply with other actors to which they are

attracted in some way. This gives the attractive actor power over other actors that is most often unintentional, although actors sometimes purposefully manipulate their appeal through public relations and advertising campaigns to increase their relative power within a system (Perrow, 1961). Bierstedt (1950) distinguishes power from prestige, arguing that power is more often the cause rather than the result of prestige. The position here is that prestige, the degree of positive evaluation of an actor by others, is mostly an outcome of the exercise of power. Thus positive evaluations by others are viewed as social objectives that actors seek to attain by manipulating the control and conversion of valued resources. While prestige differs from force and dominance in that it can only be granted by others and is often sought as an end in itself, it is also an often used basis for power - to gain and maintain special rights and abilities (privileges) to influence others. Once gained, prestige can be an inexpensive way of maintaining or achieving power because power can be gained without making a commitment. If actors feel that it will add to their positive evaluations to interact with a prestigious actor, the prestigious actor can increase its ability to effect desired social actions without any corresponding loss (Thompson, 1967).

To summarize, the organizational power process includes the valued resources controlled by each actor relative to those controlled by other actors in the system and is the relative ability to convert these resources to achieve desired outcomes (Figure 2.2). Organizational power is defined theoretically as a property of relations among organizational

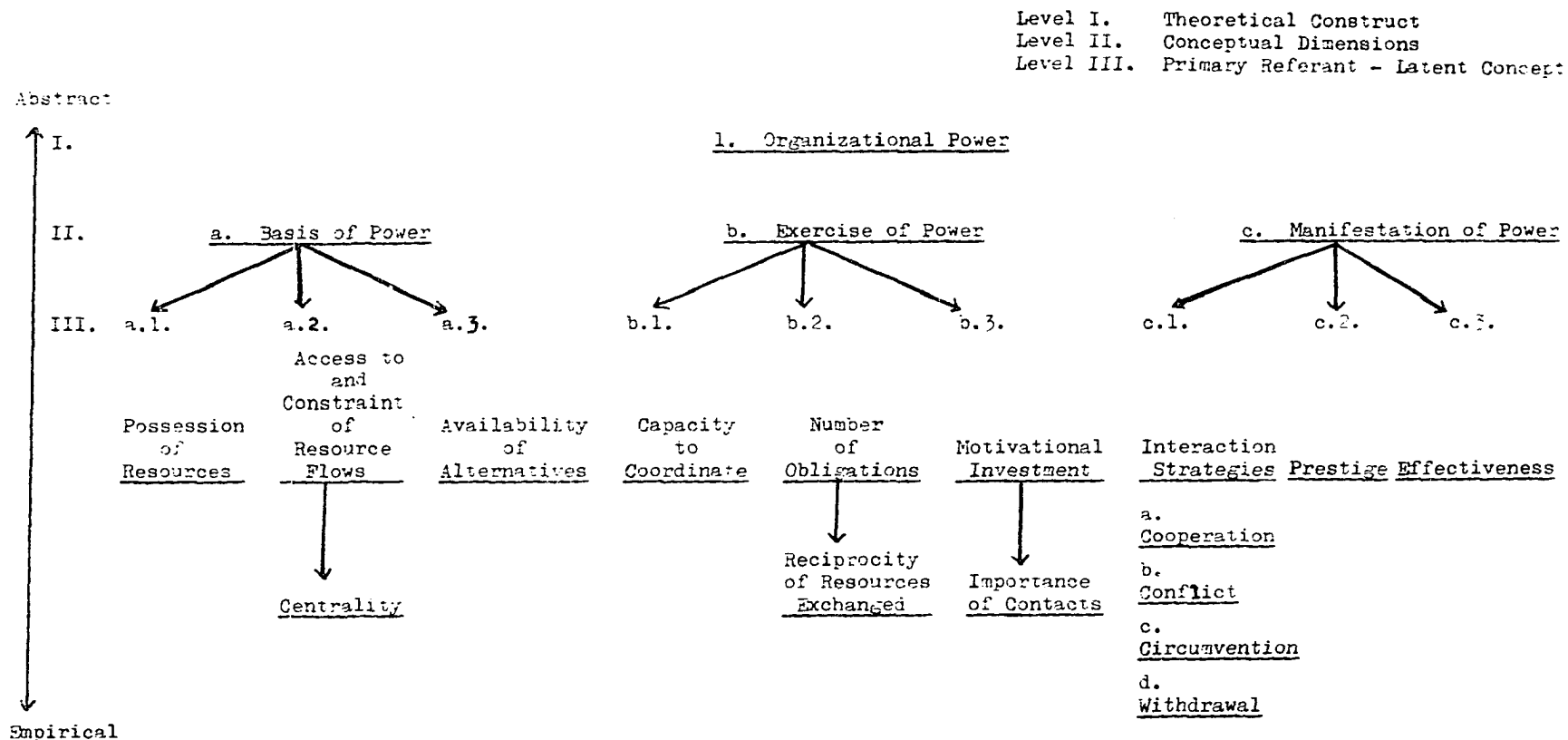


Figure 2.2

Diagram of dimensions of the process of organizational power and latent concepts.

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4. Illustrations are poor copy _____
5. Print shows through as there is text on both sides of page _____
6. Indistinct, broken or small print on several pages ☒ throughout

7. Tightly bound copy with print lost in spine _____
8. Computer printout pages with indistinct print _____
9. Page(s) _____ lacking when material received, and not available
from school or author _____
10. Page(s) _____ seem to be missing in numbering only as text
follows _____
11. Poor carbon copy _____
12. Not original copy, several pages with blurred type _____
13. Appendix pages are poor copy _____
14. Original copy with light type _____
15. Curling and wrinkled pages _____
16. Other _____

actors. Thus it is a general concept of less scope than the concept of social power because it is limited to the power relations of formally organized collective actors. It is a process that includes the relative control of resources and their conversion into actions to meet objectives of interest. Relations of power and dependence emerge as a process that includes the similarities or differences in resources controlled and converted by actors to achieve desired ends. Organizational power is conceived as a multidimensional variable concept to be measured indirectly by indicators of its operation; the basis of power (control of resources), the exercise of power (conversion of resources to effect social action), and the manifestations of power relating (interaction strategies, prestige and goal attainment effectiveness). The concepts explicated to comprise the dimensions of the process of power are thought of as variable properties capable of cardinal measurement. As such, there is no distinction of types of power. The emphasis is on the relative amount of power as a process - the relative control and conversion of valued resources manifested in interaction strategies to effect desired outcomes.

The Dimensions of Organizational Power

Dimensions of the process of organizational power - basis or control of resources, the exercise or conversion of resources for action manifested in an organization's interaction strategies, goal effectiveness and prestige have been identified (Figure 2.2; a, b and c). These dimensions comprise a general representation of concepts to consider in

an analysis of organizational power and are considered explicates of the power process (Olsen, 1978). Coleman (1973) emphasizes control of resources or events in order to effect desired outcomes in his definition of power. This aspect of power is also central to the view that organizations seek to control environmental elements to reduce uncertainty and thus enhance the probability of survival (Thompson, 1967). Power is viewed as the obverse of dependency in exchange formulations (Blau, 1964; Emerson, 1962). While power-dependency is often analyzed as a property of organizational dyads, theoretical definitions of the concepts which comprise the process of organizational power as characteristics of an organizations relations with all other organizations in a network are presented in the following sections. Power-dependency relations of an organization with the aggregate of organizations in its network is an approach that also exists in the literature. This approach recognizes that power-dependency relations of a pair of organizations are influenced by relations of each organization with all others in a relevant network.

Basis of power - control of relevant resources

Resource control forms the basis of the development of power (Adams, 1975). The basis of organizational power is the amount of control of valued environmental resources relative to other organizations in the network (Figure 2.2, a). Control of relevant resources refers to the capacity to hold resources for conversion to influence social action. Control of resources to reduce dependency depends on the amount and kind

of resources possessed, constraint of resource flows and the availability of alternative sources of resources. Control is not reciprocal. Thus, an organization that possesses a larger amount of valued resources, is more able to determine the flow of resources in a system and has more alternative sources than other organizations, will have more control over resources relevant to goal interests in that system. Organization A with a large staff and budget, a reputation for influence and legitimation; that also enjoys a position of centrality in terms of the flow of money and products within a network; and has several alternatives for obtaining inputs and disposing of outputs will have considerable control over the resources it holds.

Possession of resources There are commodities that some organizations have or are characterized by that make it easier for them to realize their goals than other organizations. These things that others also desire are usually referred to as resources. Resources possessed is one aspect of the control of resources or basis of the power process (Figure 2.2, a, 1). Resources are assets that have the potential to be converted for the exercise of power (Etzioni, 1975). Resources that are possessed are thus an important aspect of the control of valued resources to reduce interorganizational dependencies.

A resource is defined as any attribute, activity, circumstance, service or commodity; tangible or intangible, limited or unlimited; that is useful to be mobilized for goal attainment. Any thing can be a valued resource, i.e., knowledge, staff, money, equipment, information, reputation. Value is determined by whether or not it is needed for the organizations' goal attainment (Adams, 1975). Limited resources are fixed in

supply and diminished by use, while unlimited resources are not diminished by use (Olsen, 1978). Tangible resources are always limited as are many intangible resources, such as reputation, if abused or overextended.

Attributes that are typical resources for organizations include prestige and reputation for influence, although here prestige is viewed as a resource goal that is attained by power exercise and which becomes a resource to maintain power. Legitimacy, freedom from superordinate constraints, and flexibility of time are circumstance resources. Activities or services include the type of functions performed or products produced. Commodities ordinarily refer to money, staff, equipment, knowledge and skill. Some resources must be possessed before other more instrumental resources can be activated or invoked (Rogers, M. 1974). Information and time are often resources that must be controlled before other resources can be used for influence. "Bids" could be requested for a major contract, but if an organization does not receive notice or has insufficient time for developing a "bid", it would have little influence on the outcome even if it possessed many other resources that could have allowed it to win the contract. Most resources can serve as necessary preconditions for the activation of other resources.

Possession of resources refers to the resources held by an organization as property or attribute. Resources possessed are those attributes, activities, circumstances, services or commodities that an organization has, owns, holds or masters. As such resources can be valued inputs or outputs for the organization.

Since any "thing" can be a resource if it is valued, the identification of specific resources possessed as control of resources is contingent upon particular organizations and their interests. While resources vary in their generality according to how widespread the need is for the resources (Rogers, M. 1974). It cannot be assumed that resources of high generality will necessarily be valued by a specific set of organizations. Amount and types of valued resources that are possessed by an organization are assumed to represent underlying continuous dimensions that can be measured at an interval level.

Access to and constraint of resource flows Access to or constraint of resource flows refers to the location of an organization within a network regarding its connectedness with other organizations. Thus organizations can be arrayed on a continuum of the degree of access or constraint they have over resource flows. An organization that is located centrally in terms of the flow of information about resources to and from other organizations is located strategically for access to valued resources and to constrain the flow of these resources to other organizations in the network. Power is gained relative to other organizations due to involvement in transitive connections (Mott, 1970). Extent of access to or constraint of resources is the extent that exchange among members of an organizational set is dependent upon an actor due to its location within the network. Emerson (1973) refers to this property as structural dependence. Thus, organizations that are more central in the network have more control over resources in the system than organizations on the periphery (Olsen, 1970:6-7). Central organizations play

roles that are needed for system integration (Laumann and Pappi 1976). While centrality can be an important indicator of structural dependence (Emerson, 1973), the important point is the degree resources are mediated by an organization relative to other organizations in a network. An organization may appear to have the most central position in a network in terms of the exchange of resources, but be dependent on more peripheral organizations as a source point for resources to be exchanged within the system (Cook, 1977; Cook and Emerson, 1978). Organizations can also be "isolates" in a field due to a willingness "to do without" rather than lose autonomy (Blau, 1964). Thus, centrality of communication connectedness is viewed as the critical structural factor of access to and constraint over resource flows. The more information an organization sends to and receives from other organizations, the more access to and constraint over the flows of resources in the network it is likely to have.

Some resources possessed are not transferable. This can be due to their lack of value in the system or the inability of an organization to transfer resources because of superordinate constraints. Furthermore, some resources are attributes that are conferred by others or are a function of the particular organization alone. Examples are prestige and image. The exercise of constraint over resource flows to other organizations provides the organization with opportunity to compensate for nontransferrable resources in the distribution of resources and represents an important aspect of control of resources to influence outcomes (Burt, 1977a) (Figure 2.2, a, 2).

Availability of alternatives Availability of alternatives for obtaining resources or disposing of them as outputs is a further aspect

of an organization's dependency and vulnerability in its power relations. According to Thompson (1967) organizations seek to maintain alternative sources of needed resources because the availability of alternative sources increases power by decreasing dependence upon other organizations in the environment. An organization is less dependent upon exchanges with other organizations to the extent that needed element can be obtained from other sources (Levine and White, 1961). Conversely, the fewer alternative sources available to an organization, the less bargaining leverage it has to determine exchange ratios with other organizations in its set (Jacobs, 1974) and the less control it has over allocation of its own resources. Thus availability of alternatives is an important aspect of the organization's ability to control resources for determining preferred outcomes (Figure 2.2, a, 3). If organization A is one of many suppliers of a resource to a single recipient B, it is likely to be highly vulnerable to the influence of the one outlet organization B and apt to be in competition with the fragmented set of suppliers. Conversely, but similarly, if A is one of several organizations seeking inputs from a single supplier B, it will also be vulnerable to B's demand and influence. Likewise, A will be dependent on B if A is a single supplier and B is the only consumer or if A is a single buyer and B is the only supplier. In these circumstances A's ability to hold its resources to impact its own objectives will be limited relative to B's control of resources to effect the actions it desires. Availability of alternatives reflects a continuous dimension of cardinal measurement by which organizations can be characterized and distributed.

Exercise of power - conversion of resources for goal attainment

An organization's ability to exercise power is expressed in its capacity to convert or mobilize resources to realize its own objectives (Burt, 1977a; Olsen, 1978). The ability to convert resources to influence social action is affected by the control of resources. There are three aspects of the capacity for conversion of controlled resources as power exercise; the motivational investment in the relationship, the obligations already incurred by the organizations and the capacity of the organization to coordinate the mobilization of resources as a structure (Figure 2.2, b). Power-dependency relations emerge from the relative control of resources but more directly are reflected in the rewards mediated by a relationship and the respective obligations accumulated by transactions (Jacobs, 1974; Blau, 1964). The relative capability to organize social action also reflects the organization's structural ability to mobilize resources and exercise power (Olsen, 1978),

Capacity to coordinate The capacity to coordinate activities of its subunits is a feature of collectivities that refers to the degree a collectivity is socially organized. Organizations are energy-binding systems (Mott, 1970) and as such their power is partially dependent upon the degree they are organized or internally coordinated for collective action. Mott (1970) asserts that the creation of systems of coordinated action is the major means of binding in energy (power). Parsons (1960) refers to organizational power as "the generalized capacity of a social system to get things done in the interest of collective goals." The organization is an action system that uses power of coordination to achieve the

collective goals of its subunits. This helps grasp the notion of internal coordination as an aspect of organizational power. Coordination of subunits to act in concert is an important aspect of the processing of resources to achieve specific outcomes (Figure 2.2, b, 1). The more subunits (complexity) there are, the more potential there is for binding in energies to realize collective goals. The relative capacity of organizations to coordinate and integrate subunits is thus an aspect of their power relations.

The idea that organizations gain power from their degree of social organization is in contrast to individuals, who do not, although organizational membership may be a resource base for power relations among individuals. The more activities are coordinated to meet a common objective in an organization, the more the organization will be able to mobilize resources and dominate others to effect desired social action. "In union there is strength" goes the old adage. This is a source of power that is unavailable to single individuals. It is an aspect that is unique to power as a property of organizational relations - the comparative degree of social organization or coordination of subunits for goal attainment. Blau (1964) refers to the double power of organizational leadership. Through exercise of power within an organization the leadership derives power from the organization for use in relations with other environmental units. While this source of power is similar to domination by ability to perform roles, it differs in that internal coordination of subunits is purposeful and intended. The degree an organization is able to coordinate its subunits for action will affect the efficiency with which it can convert resources for the exercise of power.

Obligations incurred Ability to convert resources also involves the reciprocity of social exchanges (Figure 2.2, b, 2). Social exchange refers to voluntary actions motivated by what is expected in return from others (Blau, 1964). A principle of exchange is that an actor that supplies resources to another creates obligations to repay. When the obligations to repay are not met in kind, dependence is created through non-reciprocity of exchange. The dependent actor is then obligated to comply with the interests of the first actor. Compliance becomes an anticipated commodity of exchange when transfers are not reciprocal.

Organizations unable to reciprocate in the exchange of resources will incur obligations and will trade compliance in order to balance the relationship. However, organizations that have accumulated few obligations can expect compliance from other organizations in exchange for needed resources and can enter exchange with little constraint toward creating dependencies. It is in this way that organizations utilize the dependencies that emerge from differential control of resources to increase power advantage. The anticipated ability to extract compliance from actors that have accumulated obligations is one aspect of an actors freedom to convert resources to realize its desired outcomes.

Motivational investment Motives invested in a relationship reflect the necessity for an organization to commit resources in a relationship (Figure 2.2, b, 3). The investment of motives mirrors the essential benefits organizations perceive will accrue to them from a specific relationship or the degree of commitment to the relationship (Emerson, 1962). In Emerson's (1962) terms the power of A over B is reflected in B's dependency on A. This premise ($P_{ab}=D_{ba}$) is a reciprocal relation ($P_{ba}=D_{ab}$).

The dependence of A upon B is directly proportional to A's motivational investment in goals mediated by B and inversely proportional to the availability of these goals to A outside the A-B relation. Thus the more potential benefits an organization perceives, the more it will be pressed to commit its resources to the relationship. The organization may want to avoid using resources in the relation out of fear of increasing dependence, but need to do so in order to obtain other needed resources. However, if A has no motivational investment in the relationship it will not be constrained to commit resources out of necessity. If A does commit resources, they can be used to increase a power advantage. Generally, the greater the perceived potential benefits for A relative to B, the more dependent A will be on B and the less power A will have relative to B, if both perceive some benefit and both commit some resources. This means that the least dependent organization will have greater ability to convert the resources it controls to influence the more dependent organization and to realize its own outcomes.

Jacobs (1974) discusses motivational investment as the degree of "essentiality" of resources or the extent organization A can do without resources mediated by B. The criterion here is A's substitutability of resources to be obtained from B. The view here is that motivational investment is an aspect of the conversion of resources apart from availability of alternative sources, but influenced by available alternatives. The essentiality of resources is the perceived necessity to commit resources to a relationship. Relative nonessentiality will be necessary if an organization is able to convert its resources for influence. Lack

of substitutability or motivational investment is reflected in the unimportance of a relationship or the lack of necessity of a relationship. Substitutability refers to an organization's ability to or willingness to use alternative resources as the result of redefinition of values for goal attainment. Substitutability is thus distinguished from availability of alternative resources where there is no shift in goal values. An example of the redefinition of values is a health care facility that opts to focus on provision of long-term or convalescent rather than acute care services, thus opening up opportunities to substitute available resources for goal attainment. This action reduces the essentiality of some resources that must be obtained in exchange with other health care agencies and reduces motivational investment in relations with these agencies. The substitutability of resources will be partially determined by other resources that are controlled, such as time and freedom to develop alternative programming.

The motives invested in relationships, obligations incurred and capacity to coordinate subunits are each conceptualized as variables. Each is a variable characteristic of organizations' relations reflecting an underlying dimension of continuous and equal categories.

Manifestations of organizational power

The power process is conceptualized in terms of three dimensions of its dynamics - the basis, exercise and manifestation of organizational power relations. Manifestations of power are viewed as outcomes of the

basis and exercise of power. Manifestations of the power process include strategies for interorganizational interaction, organizational prestige, and organizational effectiveness (Figure 2.2, c).

Strategies for interorganizational interaction Some believe that interorganizational relations are the key to understanding power in society and as such are seen as the most important aspect of modern social life. It has been empirically demonstrated that linkages among organizations become bases of power to shape community decisions and directions (Perrucci and Pilisuk, 1970; Turk, 1973). A dominant reason for the development or avoidance of linkages among organizations is that organizations attempt to enhance their positions by their choice of interactions with other organizations in their environments (Levine and White, 1961; Benson, 1975). The interactions chosen are evaluated in the context of resources controlled by each actor and the ability of each to convert resources into desired action. The specific patterns of interorganizational linkages that emerge are reflections of organizations' abilities to control and convert resources vis-a-vis other organizations in the environment. In this theory the process of organizational power, as a pervasive element of social organization, includes strategies of interaction among organizations as manifestations of their power relations (Figure 2.2, c).

The basis and exercise of power are important factors in an organization's ability to adapt to or control environmental contingencies (Thompson, 1967). The relative power of organizations is a function of the control of valued resources and their conversion into social action

to influence outcomes of benefit to them (Coleman, 1973). The concepts elaborated in the dimensions of the power process generally coincide with Blau's (1964) typology of conditions of independence and requirements of power. Blau (1964) argues that four alternative strategies are available to an actor A to avoid dependence on actor B. The actor can: (1) supply B with resources of value - cooperation, (2) take resources from B by coercive force - conflict, (3) do without B's resources - withdrawal, or (4) obtain the resources elsewhere - circumvention. Interaction strategies selected for adaptation to or control of environmental uncertainties (dependencies) can be seen as outcomes of the power relations among organizations or as response to the organizations alternatives to compliance (Blau, 1964). Stated otherwise these alternatives are strategies that can be used by organizations to maintain power or reduce the power advantage of other organizations. Interorganizational relations and structures are conceptualized as emerging from the power relations of organizations and often involve a process of power balancing within a system of organizations (Cook, 1977). To sustain a power advantage an organization must prevent other organizations from choosing any of the alternatives but must have one or more of the alternatives available for its own action. To balance the power advantage of another, an organization must be able to reciprocate with valued resources, do without or obtain resources elsewhere. Implications of each of the organizational interaction alternatives directs attention to initiation of voluntary cooperative interactions by an organization when it has a reciprocity advantage, when few motives are invested in relations and when

alternatives are many. Attention is directed to conflict when a reciprocity advantage exists and motivational investment is high, but others have more alternatives. Circumvention is most likely when the organization is disadvantaged for power exercise but alternative sources are available. Withdrawal is the most probable outcome when the organization is unable to reciprocate, has motives invested in the relationship and has no or few alternatives (Figure 2.2, c, 2).

Cooperation Cooperation generally refers to a state of mutual reinforcement among social entities. It is the "quality of the state of collaboration..." (Lawrence and Lorsch, 1967). Most agree that when cooperation occurs, the parties have been helped (Goldman, 1962). Cooperation entails a willingness of actors to communicate with one another and contribute action (Barnard, 1938). Warren, et al., (1974) defines organizational cooperation as "interaction between organizations directed at achieving the same issue (the subject matter, problem or issue that occasions the interaction) outcomes." Cooperation can be an adaptive or a controlling strategy, but in either case the cooperating organizations "must demonstrate capacity to reduce uncertainty" for each other and "must make a commitment to exchange that capacity" (Thompson, 1967). However, cooperation does not necessarily mean that benefits are symmetrical or that costs do not accrue to either party. Cooperation is social interaction in which actors voluntarily or involuntarily conduct joint ventures (Halpert, 1974). Cooperating relations vary according to the amount of constraint placed on cooperating parties (Thompson, 1967) and according to the intensity of interaction or amount of resources

committed to transactions (Rogers, 1974b; Klonglan, 1972). Cooperative interactions also vary according to the types of resources that are sought by the parties and that are committed to the exchange. Hence loss of autonomy and power are potentially important costs in cooperative interactions. Cooperative strategies to gain or balance power thus vary according to different degrees of commitment and constraint that are required of the participants. Contracting, coopting and coalescing are alternative cooperative strategies that can be selected by organizations (Thompson, 1967). Contracting is the negotiation of agreements for future exchanges or joint programs. Contracting represents the least constraining cooperative strategy but varies itself according to the degree of formalization of agreements. Coopting is the absorption of environmental elements into the leadership or decision-making structure of an organization as a means of reducing threats and increasing stability (Selznick, 1949). Coopting is a more constraining strategy than contracting. Coalescing refers to joint venture with another organization which provides a basis for continued exchange and joint decisions. As such, coalescing is the most constraining cooperative strategy, although joint ventures can vary according to the degree of formality and degree of permanence of the agreement to share programming.

Conflict Conflict refers to opposition between two or more social units (Murray, 1974). Thus organizational conflicts are opposing responsibilities, priorities and actions or disagreements between two organizations. Ordinarily conflict involves attempts to obtain needed resources by coercive force or block another organization's access to alternative sources (Blau, 1964). Conflict interactions vary in their

degree of regulation and in the degree of intensity or potential harm or costs rendered the parties in the interaction (Coser, 1956). Regulated conflict generally involves a third party that monitors predetermined rules of opposition, and is institutionalized and legitimized (Dahrendorf, 1959; Barnard, 1938). Types of conflict representing different degrees of intensity and regulation include competition, bargaining, negotiation, price wars. Cooperative relations; contracting, coopting and coalition formation; can also be formed as conflict strategies by less powerful organizations to monopolize a source and oppose the actions of more powerful organizations in their environments. However, conflict relations refer here to interactions initiated by organizations to directly and indirectly oppose or block the resource inputs or goals and programs of others.

Withdrawal An organization may choose to withdraw interactions when power relations are balanced against it. Withdrawal refers to avoiding interaction by doing without a valued resource (Blau, 1964). Withdrawal can often be made possible by redefining the scarce resource as unnecessary which amounts to a decrease in the value of the resource for the dependent organization and a decrease in the size of the organizational network (Cook, 1977). New ideals are formed which redefine the nature of valued resources. A response to the alternatives to compliance can be change and differences between ideologies (Blau, 1964).

Circumvention An organization may attempt to increase the number of alternative suppliers or outlets for a resource of value in order to circumvent and minimize the control of another organization (Jacobs, 1974; Cook, 1977, Emerson, 1962). Cook (1977) refers to this

strategy as "network extension." The imbalanced power relation prompts a search for alternative sources which may result in new exchange relations and extend the network of interorganizational relations (Cook, 1977). Conflict processes also emerge as organizations attempt to block the development of alternative sources by other organizations. Political structures to prevent or maintain the development of alternative sources are an outgrowth of these power maneuvers. For example, the American Medical Association has a long history of successes in sponsoring or opposing legislation to prevent the development of alternative sources of access to clientele by other health professions.

Strategies selected to control environmental contingencies depend on whether an organization is relatively dependent or independent in a power relation. Furthermore, the interactions and structures that form some organization's relations may impact other organizations as conflict relations, or may counter strategies of circumvention. An example would be when organization A's attempts to circumvent B to form an exchange relation with C and D are countered by B's coalition with C and D. The prestige and corresponding privileges of organizations to effect their desired actions (Burt, 1977a) and the effectiveness of their goal attainment (Olsen, 1978) are, therefore, functions of resources controlled, the ability to convert resources into action and the interaction strategies used to adapt to or control environmental uncertainties. The number of cooperative, conflicting, circumventing and withdrawal strategies selected by organizations each are conceptualized as reflecting a dimension that is continuous and consistent with a cardinal level of measurement.

Prestige and privilege Prestige and the corresponding privileges that accompany it are outcomes of power relations (Lenski, 1966) (Figure 2.2, c, 2). Prestige refers to the "favorable evaluation that an actor receives from others" (Olsen, 1978). Privilege is access to desired resources that is granted by others. Actors seek to exercise power in order to gain prestige and privilege. Hence power and prestige are highly interrelated in social life. However, prestige and privilege can be distinguished analytically from the basis and exercise of power. Prestige and privilege must be granted the actor by others, whereas resources are controlled and converted in the process of power regardless of the wishes of others. Furthermore, the basis and exercise of power are antecedent to the acquisition of prestige in the process of power. Prestige and privilege accrue to actors in social relationships when the control and ability to convert resources are balanced in their favor. Initially all actors compete for scarce resources, but as differences in status emerge from different degrees of success, the more successful actors seek prestige and privilege. The less successful exchange subservience and support for prestige and privilege for needed resources (Blau, 1964). The basis and exercise of power rest primarily on the distribution of resources controlled and converted to force desired social action, while prestige rests on social consensus concerning privileges or rights that must be granted actors because of their status (Blau, 1964). Prestige and privilege are outcomes of power relations that are important for the maintenance and increase of power. The genesis of power is most immediately dependent upon control and conversion of resources in ongoing social relationships, but prestige and privilege are

reflections of power that have the potential to be transferred across social contexts (Olsen, 1978). Prestige and privilege are usually sought as ends in themselves. Actors seek to gain an advantage in the control and conversion of resources, but it is ordinarily a means to gain prestige and to shape social organization.

Goal attainment effectiveness Organizational power is the ability relative to other organizations in a set, to control and mobilize resources for desired outcomes. Thus the effectiveness of organizations in attaining their goals relative to other organizations in its network is the manifestation that ultimately reflects interorganization power relations (Figure 2.2, c, 3). Effectiveness is the reflection of net power advantage or disadvantage which results from a set of relationships between the organization and other organizations in its environmental set.

Effectiveness is conceptualized as the degree to which an organization realizes its goals (Etzioni, 1964). Organizations are viewed as rational and goal-seeking. As such, goals guide what happens in an organization. Goals are desired ends that an organization attempts to realize (Etzioni, 1964). They are abstractions around which behavior is organized (Hall, 1977). Effectiveness of goal attainment is a useful notion for understanding the extent to which organizations as actors are able to effect their desired ends or get their own way.

However, the definition of effectiveness as goal attainment is not without problems. One difficulty is that organizations often have multiple goals and some can be in conflict with others. Efficiency is also often confused with effectiveness. Efficiency is the "amount of resources used to produce a unit of output" (Etzioni, 1964). Although efficiency

and effectiveness are sometimes related, an organization can be effective but not efficient and the reverse is also possible.

Operative goals are specific policy goals developed from official and unofficial sources through interactions within the organization. The operative goals persist after the interactions have ceased and thus reflect abstract official goals, modified by interactions within the organization and adjustments of the organization within its environment. If it is to survive an organization must maximize its effectiveness. Effectiveness can best be understood in terms of the operative goals - the specific operations established by the organization to realize its own interests.

Abstract values that guide organizational behavior are converted into specifics for the day to day operation of an organization. Perrow (1961) distinguishes "official" from "operative" goals. Official goals are the general purpose of the organization as put forth in the charter, annual reports, public statements by key executives and other authoritative pronouncements. Operative goals "designate the ends sought through actual operating policies of the organization." They are means which become ends when the organization is analyzed.

It is the organization's goals, actually pursued, that are of concern and not whether they necessarily represent the interests of all members of the collectivity. In other words it is assumed that the goals pursued by an organization reflect the interests of the intraorganizational dominants - the same dominants that represent the organization in its interorganizational relations to reduce uncertainties. The effectiveness of an organization is thus an outcome of resources controlled and

converted to effect desired social action and ordering.

This view of organizational effectiveness as a manifestation of power is in part consistent with the perspective that views organizational effectiveness as the organization's ability to acquire scarce resources, maintain a bargaining position and maximize autonomy within its environment (Yuchtman and Seashore, 1967). However, organizational effectiveness is not seen here as synonymous with ability to acquire resources and maintain a power advantage. Rather environmental dependencies along with other factors influence an organization's goal attainment effectiveness. While the process of power relations is manifested in the relative effectiveness of organizations within a network, the process of power relations does not contain all determinants needed to explain a distribution of relative organizational goal attainment effectiveness.

The concepts to be used to construct a formal theory of organizational power have been presented and defined theoretically. In order to proceed these concepts are arbitrarily treated as a closed system. There are other concepts that could have been included that would increase the explanatory power of the theory and add to its scope and complexity. For example, vertical linkages with superordinate systems are not considered in the theory. Also propositions are developed only for interaction strategies as the ultimate dependent variables. Progress in the construction of formal theories will not be realized in single attempts to develop grand complex theories. Rather progress will come through the accumulative results of modest attempts to formalize small sets of concepts into propositions and theories. For this reason, complexity and

scope are sacrificed for manageability.

In Chapter III the propositions are developed and interrelated to form a theory of the process of organizational power relations.

CHAPTER III. A THEORY OF THE PROCESS OF ORGANIZATIONAL POWER

Introduction

The purpose of this chapter is to develop theoretical statements which interrelate concepts explicated from the abstract construct - organizational power - and order the theoretical statements to build a theory of the process of organizational power. The development of continuous theoretical statements that form the main body of the theory of organizational power is emphasized. However, several either-or statements that comprise assumptions for the theory are also presented.¹ Causal modeling is the procedure chosen to order the continuous theoretical statements into an interrelated explanatory set that link the basis, exercise and manifestations of the process of organizational power.

Limitations on the scope of the theory of organizational power

The conceptualization of organizational power includes organizational effectiveness and prestige as ultimate outcomes of the process

¹The important distinction between continuous and either-or theoretical statements or propositions is elaborated in Chapter I. The critical distinction is the way concepts are connected in statements. Continuous rather than discrete connections are necessary for mathematical modelling and analyses that allow maximum explanatory power.

of power relations. However, for this study causal connections are developed for the interaction strategies as the ultimate dependent variables in the causal model. Development of theoretical propositions and causal ordering beyond this point is considered outside the scope of the dissertation.

The scope of the theory is also limited by the nature of linkages among organizations that are considered. The theory addresses organizations that are linked together horizontally to form a network.

The chapter is organized into two main sections. The first section contains the assumptions for the theory of organizational power and for the causal model approach. Continuous theoretical statements (propositions) are developed in the second section along with the theoretical rationale for linkages among concepts and for causal ordering.

Theoretical Statements

Theoretical assumptions

"Social organization is the process of bringing patterns of social ordering and shared cultural meanings into human social interaction through time" (Olsen, 1978:6). As such, the process must involve at least two interacting actors. As interactions among actors continue through time, they become patterned with shared meanings. Social order emerges from patterned relationships and shared meanings. Hence social organization is a process of emerging social order. And at any point in time the structure of the social order that has emerged can be described.

Social organization thus refers to the continuing process of emergent social order and to existing social structural entities.

Organizations emerge from the process of social organizations and are products of that process. As such, organizations are social actors in their own right. Likewise, the patterned interactions and relationships among organizations are also products of social organization. This is formally expressed below as a theoretical proposition - the first general assumption of the theory of organizational power.

A.1. Organizations and interorganizational relations are a part of the broad set of relationships, structures and processes of social organization.

The structural entities that emerge from the process of social organization are also characterized by numerous more specific social processes. Examples are social conflict, integration and cohesion. Social power is one of the more fundamental and thus more important of these processes. Power infuses all social relationships and acts (Hawley, 1963). The relative energy to determine outcomes is characteristic of every social order and organization. Social order and organization are thus not possible without power (Bierstedt, 1950). Based on this discussion the second theoretical statement provides a general assumption for the theory of organizational power and is stated as follows:

A.2. Social power is a process inherent in all social organization.

Since power is a process inherent in all social organization, power characterizes the relations of two or more actors in a system. Socially, actors exist in reference to all other actors in a system. The distribution of power in any system of actors is influenced by past and present conditions that are relevant to the actor's propensity to make certain outcomes occur and the ability of each actor to manipulate those conditions to realize its own interests relative to the ability of other actors in the system (Burt, 1977a). The third assumption for the theory of organizational power is stated as follows:

A.3. In a system of organizational actors each actor will purposively attempt to control resources in order to realize outcomes which will enhance the probability of its survival.

The supply of resources valued by actors in a system tends to be limited. At some point resources will "run out." Even some attribute resources become limited by the manipulations of actors to balance the control of other resources (i.e., reputation, legitimacy). Since actors are purposive, the knowledge that resources are limited will promote attempts to gain advantages over other actors concerning the control of resources needed for realization of desired outcomes. This leads to the fourth assumption for the theory of organizational power.

A.4. Power is unequally distributed among organizational actors in a system where each actor exists socially in reference to each other actor and where the actors value the same resources (Rogers, M., 1974).

Systems of organizational actors include those where relations among the actors are influenced by the formal authority of superordinate actors or by actors that have regulating functions. While these organizations, that are linked vertically to other organizations, are important actors to consider in the process of organizational power relations, the power process emerges among organizations where all relations are horizontal, basically voluntary and no organization formally coordinates or regulates the activities of others. Hall, et al. (1977) argues, on the basis of data from organizations serving problem youth, that the power issue is resolved when the basis of contact among organizations is a legal mandate. Nonetheless, power difference still exist. Differences in resources that are controlled and the ability to convert them to effect desired actions may also influence the selection of interaction strategies to gain or balance power. Even when legal mandates are in effect there are elements of voluntarism in interorganizational contacts. Thus, horizontal contacts are functionally voluntary with legal mandates superimposed regarding certain specific relations. However, the magnitude of relationships may vary depending on the basis of contact that is perceived to be most pervasive and thus is a potential moderating condition in the process of organizational power relations. The fifth assumption states:

A.5. Organizational power relations exist in a network where linkages are horizontal and contacts are fundamentally voluntary.

Organizational power is viewed as a process which includes the basis, exercise and outcomes of power relations. As such, a causal sequencing of variables is assumed to exist which can be used to draw inferences about power relations. According to Bunge (1959:30), causation is only one type of determinancy that can be conceptualized. The notion of causation includes asymmetry; the idea of a recursive process of producing effects. Blalock (1964:9) notes that cause is always associated with the idea of something "producing" something else. Here the manifestations of organizational power relations are viewed as outcome effects produced by the relative capacity of organizations to control and convert resources. Furthermore the exercise of power (conversion of resources) depends on the basis of power (resources controlled). While power exercise is not completely determined by resources controlled, the dynamics of resource conversion for power exercise cannot develop without the control of resources. For purposes of analysis the process is assumed to be a closed system which is isolated from all other disturbances not included in the system. Thus the causes of events that are posited are contingently necessary rather than sufficient or absolutely necessary (Abell, 1971). They are "framed in" by the assumptions or initial conditions set forth in the theory. The final assumption for the theory of organizational power is stated below.

A.6. Organizational power can be viewed from a process perspective that emphasizes causal, unidirectional relations among concepts which comprise its dimensions - the basis, exercise and manifestations of organizational power.

Figure 3.1 illustrates the general theoretical causal ordering of the concepts subsumed by the process of organizational power.

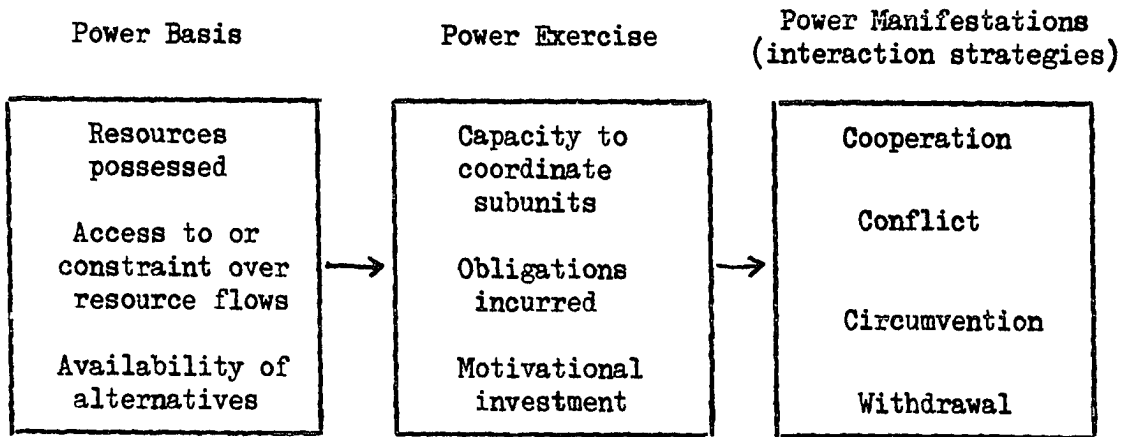


Figure 3.1 Causal ordering of concepts

Continuous theoretical statements

The basis of the power relations of organizations is the relative control each has over resources valued by other organizations. Interaction to gain needed resources is at the root of social power (Barnester, 1969). Social power issues from the disposal of some situationally valued resource. Control of resources includes the amount and kind of resources of value that are possessed, the degree of constraint over resource flows and the availability of alternative sources of resources for specific goal oriented transactions. Power is fundamentally derived from the control over resources, not from the resources themselves. Other factors being equal; resources possessed, constraint over resource flows and alternative sources are directly interrelated in an accumulative fashion as the organization's basis or capacity for power. Possession, constraint and

availability of alternatives are directly and reciprocally related to one another. Although each (possession, constraint or alternatives) is possible without the others, each increases the likelihood of an organization obtaining and increasing control of resources as a basis for power.

Causes of ability to exercise power The exercise of power is the organization's ability to convert resources to realize desired outcomes. The ability to convert resources (power exercise) includes obligations incurred by organizations in their interorganizational relations, the motivational investment in relations with other organizations and the capacity to coordinate subunits for goal attainment.

The degree an organization is able to coordinate its subunits for action is a dimension of power exercise. It is the capacity to coordinate the activities of many units that transforms input resources into organizational output commodities or actions. The extent of resource control directly affects an organization's capacity to coordinate subunits. Organizations with little control over resources will tend to have fewer subunits and fewer activities to coordinate (Blau and Schoenherr, 1971). Organizations with a small amount of resource control will have less capacity to create energy from the coordinated activities of a complexity of units because of a shortage of resources that can be mobilized. And shortages in controlled resources that are needed by an organization when it is large and complex will promote divisiveness and competition among subunits (Walton and Dutton, 1969; Uorwin, 1969). While each dimension of resource control is expected to positively and independently influence the capacity of an organization to coordinate its

subunits, resources directly available through possession will have the strongest independent impact. The amount of resources actually possessed will be most relevant to the organization's complexity and coordination among subunits. General hypothesis number one (1) and Figure 3.2 formally present these relationships.

G.H.1. An organization's total capacity to coordinate its subunits relative to the capacities of other organizations in its set is a positive linear function of the combined effects of amount and type of resources possessed, the degree of access and constraint it has over the flows of valued resources to and from other organizations and the number of alternative sources of valued resources it has available compared to other organizations in its set, the effect of each is significant.

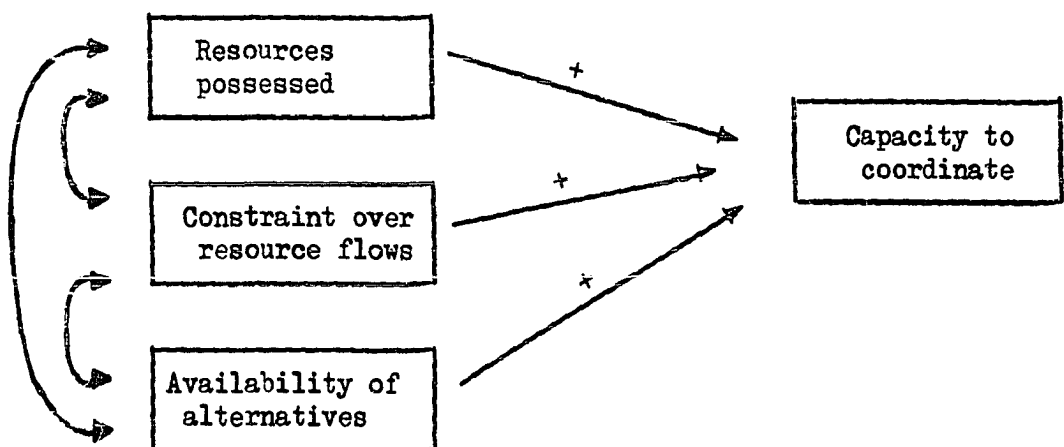


Figure 3.2

Variables affecting capacity to coordinate

Obligations incurred by an organization are an important aspect of the organization's ability to convert resources for power exercise. The basis of power does not freely become applied as power exercise unless there is potential for gain. Organizations will tend to not commit resources in transactions unless there is potential to gain a valued reciprocal advantage. Obtaining valued resources constitutes a reciprocal advantage, but the most prized advantage and the one most crucial for power exercise is the potential to extract compliance for reciprocity. Blau (1964) suggests that actors unable to reciprocate in the exchange of resources will incur obligations for compliance in future transactions. Thus an organization will attempt to maintain reciprocity of resources that are exchanged in order to avoid the accumulation of obligations. And the fewer its obligations the more an organization will be in a position to commit its resources in transactions to extract compliance from other organizations. Thus the ability of an organization to maintain non-reciprocity of resource exchanges in its favor is an important factor in its willingness to convert resources for power exercise. Resources possessed, constraint over resource flows and availability of alternative sources of resources each influence the resource exchange ratios or the obligations incurred by organizations in their transactions. Organizations with ample amounts and types of valued resources, that have alternative sources of valued resources available or those that are in a position to constrain other organizations' access to valued resources will tend to incur fewer obligations. However, it is possible for an actor to hold large amounts of valued resources and/or have a great deal of

constraint over resource flows and still accumulate obligations. Resources possessed or constrained, although valued, may not match the resources needed for particular transactions. And some resources, although valuable, cannot actually enter exchange transactions; i.e., an organization's legitimacy cannot be transferred to another actor as an exchange commodity (Burt, 1977a). In this sense the availability of alternative sources of resources is particularly important in determining the obligations incurred by actors. Dependence is less to the extent alternative sources are available to an actor (Emerson, 1962). Thompson (1967) argues that organizations seek to maintain alternative sources in order to minimize the power of any single organization. Levine and White (1961) also link the number of alternative sources to the dependence of an organization on other organizations in its set. The greater the number of alternative sources of valued resources that are available to an organization, the more it will be able to determine the nature and ratio of interorganizational exchange (Cook, 1977). This is so because the organization that can draw on alternatives will be less apt to deplete resources and will be more apt to control a valued resource needed to keep the obligations it incurs in transactions at a minimum. Thus it will be able to maintain nonreciprocity of resource exchanges in its favor.

An organization's capacity to coordinate will also directly influence the obligations it incurs in transactions with other organizations in its set. Resource control affects the reciprocity of transactions directly and indirectly via coordinated activities of subunits. This is so because concerted actions are needed to "free up" resources and effect interorganizational transactions. Organizations with low coordination

capacities will be less able to reciprocate even if reciprocal resources are accessible and will thus accumulate a large number of obligations. Resources possessed, constraint over resource flows, availability of alternatives and capacity to coordinate subunits are conceptualized as negatively related to obligations incurred. Obligations increase as control of resources decreases. Each is expected to significantly influence obligations incurred when the effects of the other three are controlled.

However, availability of alternatives will have the strongest influence on obligations incurred over and above the effects of resources possessed, constraint of resource flows and capacity to coordinate.

These relationships are summarized in the second general hypothesis and are diagrammed in Figure 3.3.

G.H.2. The relative number of total obligations incurred by an organization in its transactions with other organizations in its set is a negative linear function of the combined effects of the relative total amount and type of valued resources it possesses, the degree of access and constraint it has over the flows of valued resources to and from other organizations, the number of alternative sources of valued resources it has available and the extent of its capacity to coordinate subunits compared to other organizations in its set, the effect of each is significant.

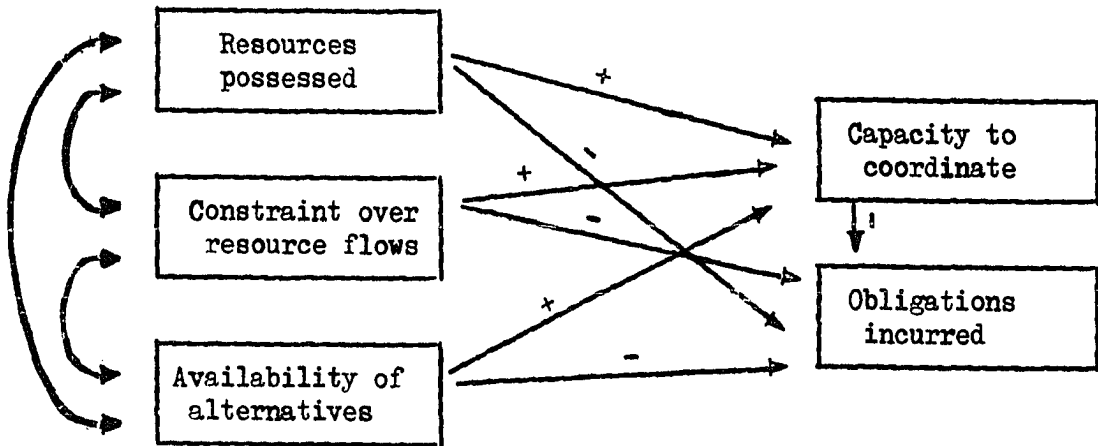


Figure 3.3 Variables affecting obligations

Motivational investment in relationships is the third aspect of power exercise that is crucial for the analysis of the process of organizational power. Emerson (1962) defined the dependence of A on B as directly proportional to A's motivational investment in goals mediated by B. Jacobs (1974) views A's motivational investment as the degree of "essentiality" or "substitutability" of resources to be obtained from B. Motivational investment is the importance of the relationship to A or A's willingness to substitute for entities received in relationships. Importance or willingness to substitute reflects the extent shared values are sustained which will continue to define valuable resources as necessities. Motivational investment is an important aspect of resource conversion as power exercise. Degree of motivational investment in relations is one important contingency in the commitment of resources to particular power balancing strategies. Organizations with a substantial power base advantage will tend to have developed more options for

substitution of resources than those with more limited power bases. Time, money and knowledges needed for development of alternative programming to meet goals are more apt to be available to organizations with a power base advantage. Furthermore, organizations with a power base advantage will tend to "lead out" in the definition of values for any particular system, thus reducing their investment in motives that arise from relationships with more disadvantaged organizations. Likewise, those organizations that have a greater capacity to coordinate their internal units will be more apt to mobilize the resources needed to search out and negotiate offers for exchange. These organizations will be less apt to become committed to specific relationships which would curtail their abilities to maneuver and bargain for transactions that are most beneficial to them. Thus, resources possessed, constraint over resource flows, availability of alternative sources of valued resources and capacity to coordinate subunits have a linear and inverse relationship with motivational investment. Each aspect of the basis of power and capacity to coordinate subunits is expected to significantly affect motives invested in the relationship when the effects of the other aspects are controlled. The contributions of each are expected to be uniform. These relationships are summarized in the third theoretical hypothesis and are depicted in Figure 3.4.

G.H.3. The total comparative motivational investment of an organization relative to other organizations in its set is a negative linear function of the combined effects of amount and type of resources possessed, the degree of access and constraint it has over the flows of valued

resources to and from other organizations, the number of alternative sources of valued resources it has available and the degree an organization is able to coordinate its subunits compared to other organizations in its set, the effect of each is significant.

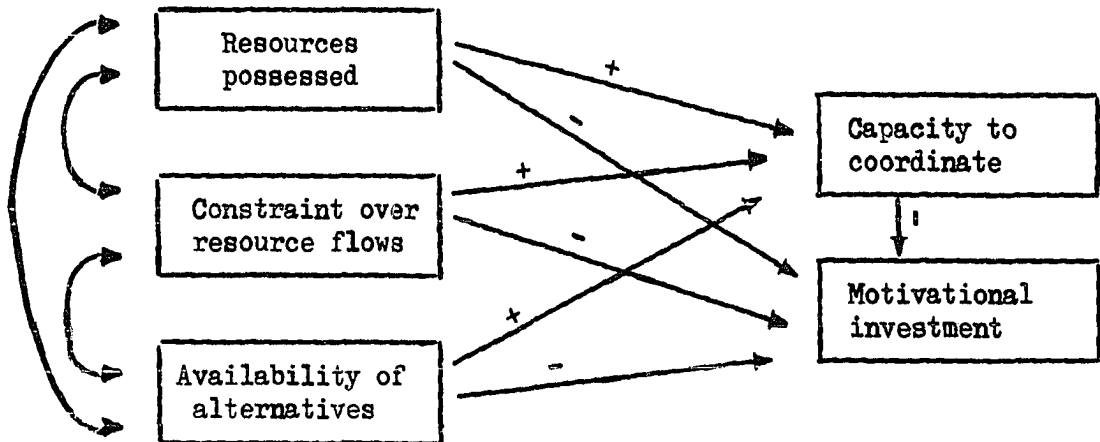


Figure 3.4

Variables affecting motivational investment

Figure 3.5 illustrates all of the relationships among concepts in the process of organizational power that have been discussed thus far.

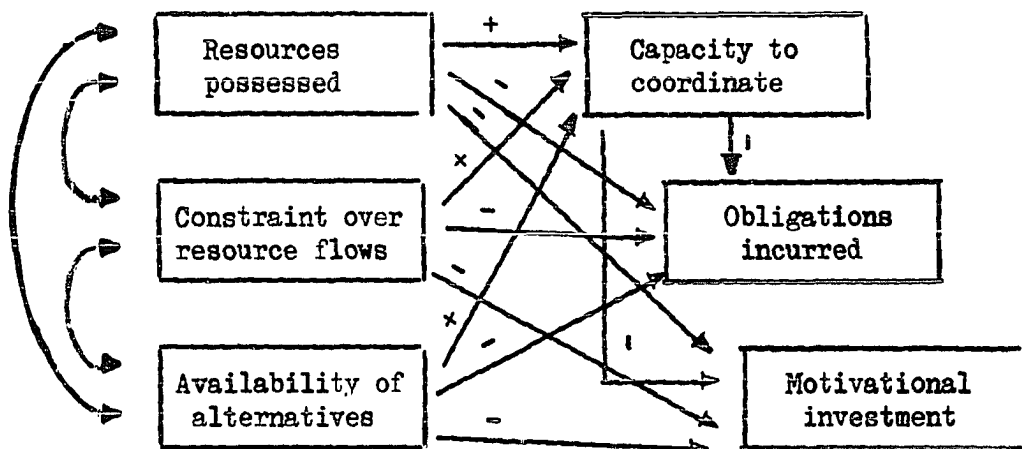


Figure 3.5

Causes of power exercise

Causes of interaction strategies

The strategies that organizations select to interact with other organizations in their environmental set are part of the process of power and are conceptualized as manifestations of power relations. The selection of interaction strategies depends on the total amount of resource control and ability to mobilize resources as power exercise an organization has compared to other organizations in its set. The objective for each organization is to maintain maximum power relative to other organizations and thus reduce the uncertainty it faces in obtaining the resources needed to realize its own interests. This is accomplished by increasing an existing power advantage relative to others or by balancing the power advantages of other organizations. Organizations make gains in their power relations by manipulating resource dependency and vulnerability relative to other organizations. Organizations select strategies of interaction with other organizations that will reduce resource dependencies and uncertainties (Aldrich, 1976b). Under conditions of voluntarism organizations can choose cooperation, conflict, circumvention or withdrawal as strategies for interaction with other organizations in their environment (Blau, 1964). Which strategy is chosen by an organization in its effort to reduce critical dependencies on others, or increase the dependencies of others on it, is dependent upon particular combinations of the contingencies of the basis of power and ability to exercise power relative to others in its set. Generally speaking, organization A selects the interaction, given the relative contingencies of resource control and ability to convert resources for power exercise, that will reduce A's dependence on B or increase B's dependence on A.

A number of studies of interorganizational relations have examined the relationship between "resources" and interorganizational interactions. However, the preponderance of theoretical and empirical analyses have focused on cooperative interactions. Conflict interactions have received limited attention, while circumventing and withdrawal strategies have received even less.

A common approach is to examine the relationship of "resources" and "organizational interactions" using the exchange perspective. This perspective has a built in bias toward cooperative relations (Negandhi, 1975; Mulford and Mulford, 1977). Furthermore, the exchange orientation emphasizes how organizations adapt to environmental forces rather than how organizations seek to gain power to control environmental factors. The central theme is that an actor A (whether an individual or an organization) will engage in an exchange relation with actor B if each can obtain valued resources equal to or exceeding their costs. While power has become a central concept in the exchange paradigm, particularly in resource dependency and political economic formulations, it is limited in ability to explain how organizations use cooperative interactions to gain power or balance the power advantages of other organizations.

A shortage of resources (resource dependency) is most often viewed as a cause of exchange interaction (Levine and White, 1961; Aiken and Hage, 1968; Aldrich, 1976b; Reid, 1964; Schmidt and Kochan, 1977). However, these studies did not examine resource scarcity directly in terms of a set of resources valued by organizations. Rather they have

assumed certain resources to be valued and scarce.

In a study of health and welfare organizations Levine and White (1961) found resource scarcity to be positively related to the number of exchange relations an organization had with others in its set. In a further study of the same organizations, perceived shortage of staff and funds were directly related to the number of interorganizational exchanges (Levine, White and Paul; 1963). Aiken and Hage (1968) present data to support the argument that organizations interact in order to obtain resources needed for new and innovative programs. Resource scarcity is an assumed condition for these organizations. And while Schmidt and Kochan (1977) argue for a positive relationship between resource scarcity and number of interactions their data do not allow a direct test of the relationship.

Cook (1977) argues that organizations enter exchange relations because of specialized function and resource scarcity with specialization of function being the major cause of scarcity. Aldrich (1976b) similarly reasons that the need to relieve resource shortages prompts organizations to make transactions.

A few writers present contrasting arguments for the relationship between scarcity of resources and frequency of exchange interactions. Adamek and Lavin (1975), in an attempt to replicate the Levine and White (1961) study, found that organizations with few resources were less likely to engage in exchanges. They concluded that while resource scarcity, in a system generally, may motivate exchange, adequate supplies of resources are associated with more frequent exchanges because organizations can avoid a negative cost benefit ratio.

Litwak and Rothman (1970) and Blau and Scott (1962) also suggest a negative relationship between resource scarcity and frequency of exchanges. Finally, in a study of organizational pairs, Paulson (1976) found support for his hypothesis that the greater the difference between two organizations resources, the greater the perceived exchange interaction. Rogers and Maas (1978) were unable to present conclusive empirical evidence for the relationship between difference in resources and interactions for pairs of natural resource agencies. Thus it remains unclear as to whether organizations with scarce or ample resources are more prone to cooperative interorganizational interactions.

These conflicting results may be clarified by distinguishing some contingencies which impact the exchange relationship. First of all, the view of interorganizational interactions as strategies an organization selects to increase or balance power advantages focuses attention on the actor that initiates the interaction. McNeil (1978) speaks to the need for social scientists to study how organizations gain control over their environments to gain power. This is in contrast to the prevalent use of adaptation models which focus on how organizations adapt to and are controlled by their environments. In adaptation models there is a tendency to lose sight of the process of organizational power.

Secondly, the various aspects of resource control; structural constraint, availability of alternative sources of resources and resources possessed; may interact to make the selection of different interaction strategies more advantageous in their power process.

Thirdly, certain intervening conditions combine with elements of resource control to produce specific advantageous strategies. The capacity

to coordinate subunits, the number of obligations accumulated in previous transactions and the strength of motives invested in a relationship are critical intervening factors that impact the selection of an interaction strategy.

Finally, organizations will use specific cooperative strategies - contracting, coopting and coalescing - depending on the advantages the strategy offers for increasing or balancing its power relations.

While an organization with limited resource control may engage in cooperative relations, it is not as likely to initiate as many informal cooperative exchange transactions with other organizations in its set as is the organization that controls many and large amounts of valued resources. The number of alternatives available to an organization is a critical factor in determining selection of the interaction strategy. Organizations will more frequently select to cooperate with informal agreements, cooptation and joint programming with other organizations to exploit a power advantage. Organizations with a power disadvantage will attempt to avoid cooptation by and joint programming with more powerful organizations or will seek to circumvent those that have advantage over them in order to cooperate with organizations with which they have more equitable power relations, the more alternatives they have available to them or they will be more apt to select formal agreements in order to gain more certain future commitments. Conversely, the fewer the number of alternatives open to organizations the more they will tend to use conflict to block the use or development of alternatives by others or they will withdraw from relations altogether. However, the extent an organization

has motives invested in relations with others and the number of obligations incurred in previous transactions are intervening conditions of power exercise that affect the selection of an interaction strategy. Obligations accumulated and motives invested in relations both act to promote compliance. Organizations that are in debt to others are constrained to comply with the desires of the creditors, while those with more motives invested share values that define resources as essential, thus reducing substitutability and constraining them to enter relations where there will be more risk of inability to reciprocate. Organizations with high capacities to coordinate subunits will be able to utilize resources at their disposal to maximum advantage. Coordinated efforts will tend to enhance ability to reciprocate in transactions and thus reduce the number of obligations incurred. Thus, relatively fewer obligations and motivational investments and greater capacities to coordinate subunits constitute an advantage for power exercise. The fewer obligations accumulated in previous transactions and the less the extent of motivational investment in relations with other organizations in its environment compared to other organizations, the more frequently an organization will select informal contracting, cooptation and coalescence as cooperative interaction strategies.

The organization with an advantage for power exercise will tend to select a cooperative exchange strategy to maintain or increase an existing power advantage. An organization with many alternatives and a large advantage for power exercise will more often initiate a cooperative strategy in order to exploit nonreciprocal relations in the knowledge that it

has more control over alternatives than its exchange partners do. Its ability to obtain benefits equal to or in excess of costs is thus maximized relative to other organizations. In this situation the organization will tend to initiate informal contacts, cooptation and/or coalescence with as many of its suppliers as possible in order to maintain reciprocity advantages as a hedge against unfavorable circumstances in the future (Thompson, 1967; Cook, 1977).

As alternatives become fewer and as motivational investment increases compared to other organizations, the organization will seek to maintain its power advantage by directly blocking and opposing other organizations' access to alternatives. When alternatives are equalized throughout the environmental set and resources are in demand, conditions of perfect competition prevail. In this circumstance we would expect organizations to initiate fairly equal numbers of conflict and cooperative interactions. But these conditions are highly unstable over time and they do not exist simultaneously for all input and output resources.

The greater the obligations accumulated in previous transactions and the weaker the motivational investment in relations with other organizations in its environment the more frequently an organization will choose circumvention as an interaction strategy to gain an advantage or balance the advantage for power exercise of other organizations. Given more obligations and less motivational investment, the organization will more often initiate circumvention as a power balancing tactic when alternatives are available and as they increase relative to others. Cartels are often developed among those more disadvantaged for power exercise in order to

gain power through concentration, reducing the alternatives of the more powerful organizations. Cook (1977) asserts that less powerful organizations cooperate with one another to gain a competitive advantage against dominant organizations. Frequency of initiation of circumvention strategies increases as the number of alternatives increase since more alternatives enhance the probability that any specific resource can be obtained elsewhere.

Organizations will choose to withdraw from interorganizational relations more frequently as the extent of their power exercise disadvantage increases and as alternatives become fewer relative to other organizations. As the number of alternatives decrease relative to others there will be fewer opportunities for use of circumventing tactics. As the relative number equalizes in the organizational set, organizations will tend to choose circumvention and withdrawal with equal frequency, if relative motivational investment is constant. However, motivational investment will interact with obligations and alternatives to produce circumvention or withdrawal as the chosen strategy. As an organization becomes relatively more disadvantaged for power exercise through increasing obligations and motivational investments and as alternatives become fewer, it will choose to withdraw from relations with other organizations with increasing frequency. The probability that withdrawal will be the only power balancing strategy option open will increase as the organization becomes increasingly disadvantaged relative to others in the organizational set.

In summary, organizations with greater power advantage relative to other organizations; i.e., they have fewer obligations and motives

invested in relations and have a greater number of alternative sources; will seek cooperative exchange relations with others. However, as the situation reverses for each of these contingencies of power basis and exercise, they will tend to withdraw from interactions and become isolates in the interaction network. When the contingencies of ability to exercise power combine with the basis of power so that organizations have an advantage in terms of obligations incurred, but have a limited number of alternatives and have strong motives invested in relations, they will tend to come into conflict with other organizations in order to obtain needed resources by coercion or to block attempts of less advantaged organizations to circumvent them. Conversely, organizations will more frequently seek to circumvent other organizations the more alternatives they have, the greater their accumulated obligations and the weaker the motives are that are invested in the relations.

These relationships among dimensions of resource control and conversion and interaction strategies selected by organizations are stated formally in theoretical hypotheses four (4), five (5), six (6) and seven (7).

G.H.4. The relative frequency of selection of cooperative exchange strategies by an organization is a linear function of the combination of the positive direct effects of the total amount and type of resources possessed, total degree of access and constraint over resource flows, the number of alternatives available, the extent of capacity to coordinate subunits and the negative direct effects of number of obligations accumulated and strength of motivational investment relative to other organizations in its set, the effect of each is significant.

G.H.5. The relative extent of conflict initiated by an organization with other members of its set is a linear function of the combination of positive direct effects of the total amount and type of resources possessed, total degree of access and constraint over resource flows, the extent of capacity to coordinate subunits and the strength of motives invested in relations and the negative direct effects of the number of alternatives available and the number of obligations accumulated relative to other organizations in its set, the effect of each is significant.

G.H.6. The relative frequency of selection of a strategy of circumvention by an organization is a linear function of the combination of the negative direct effects of total amount of resources possessed, total degree of constraint over resource flows, the total capacity to coordinate subunits and the strength of motives invested in relations and the positive direct effects of the number of alternatives available and the number of obligations accumulated in transactions relative to other organizations in its set, the effect of each is significant.

G.H.7. The relative frequency an organization withdraws from interaction with other organizations in its set is a linear function of the combination of negative direct effects of total amount of resources possessed, total extent of constraint over resource flows, the total number of alternatives available, the total capacity to coordinate and the positive direct effects of the number of obligations incurred and the strength of motives invested in relations with others relative to other organizations in its set, the effect of each is significant.

The complete theoretical causal model

The complete theoretical causal model is presented in Figure 3.6. The model illustrates the causal ordering of concepts and propositions to form a theory of the process of interorganizational power relations.

Refinement of the theoretical model

The model presented in Figure 3.6 can be simplified for analysis by including only initiation of cooperative and conflict strategies as endogenous variables. Redundancy exists in the model as presented. As posited, selection of withdrawal strategies is a function of combined effects that are the reverse of those that produce selection of cooperative strategies. Likewise, selection of circumvention is a function of combined effects that are the reverse of those that produce conflict. Thus, the theory is most parsimoniously presented in Figure 3.7 as a causal model with selection of cooperative and conflict strategies as the final dependent (endogenous) variables.

Theoretical statistical propositions

Theoretical statistical propositions are specified to assure consistency between the theoretical relationships hypothesized and the testing or validation of relationships with empirical observations. Since this is a theory construction or theory building exercise, the aim is to determine the potential validity of the theory by assessing its consistency with empirical observations. The theoretical statistical hypothesis for each general hypothesis takes the following form:

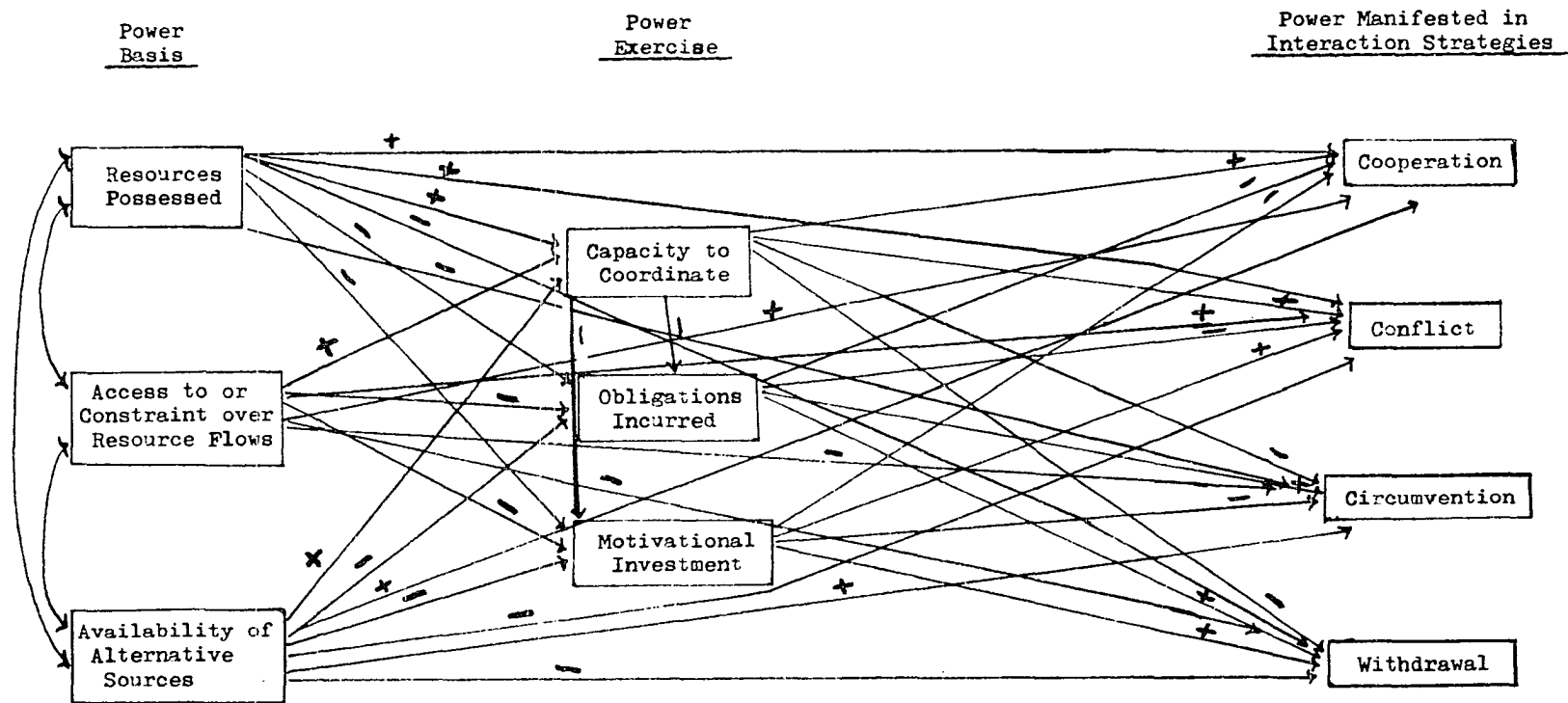


Figure 3.6

The causal model of the process of organizational power.

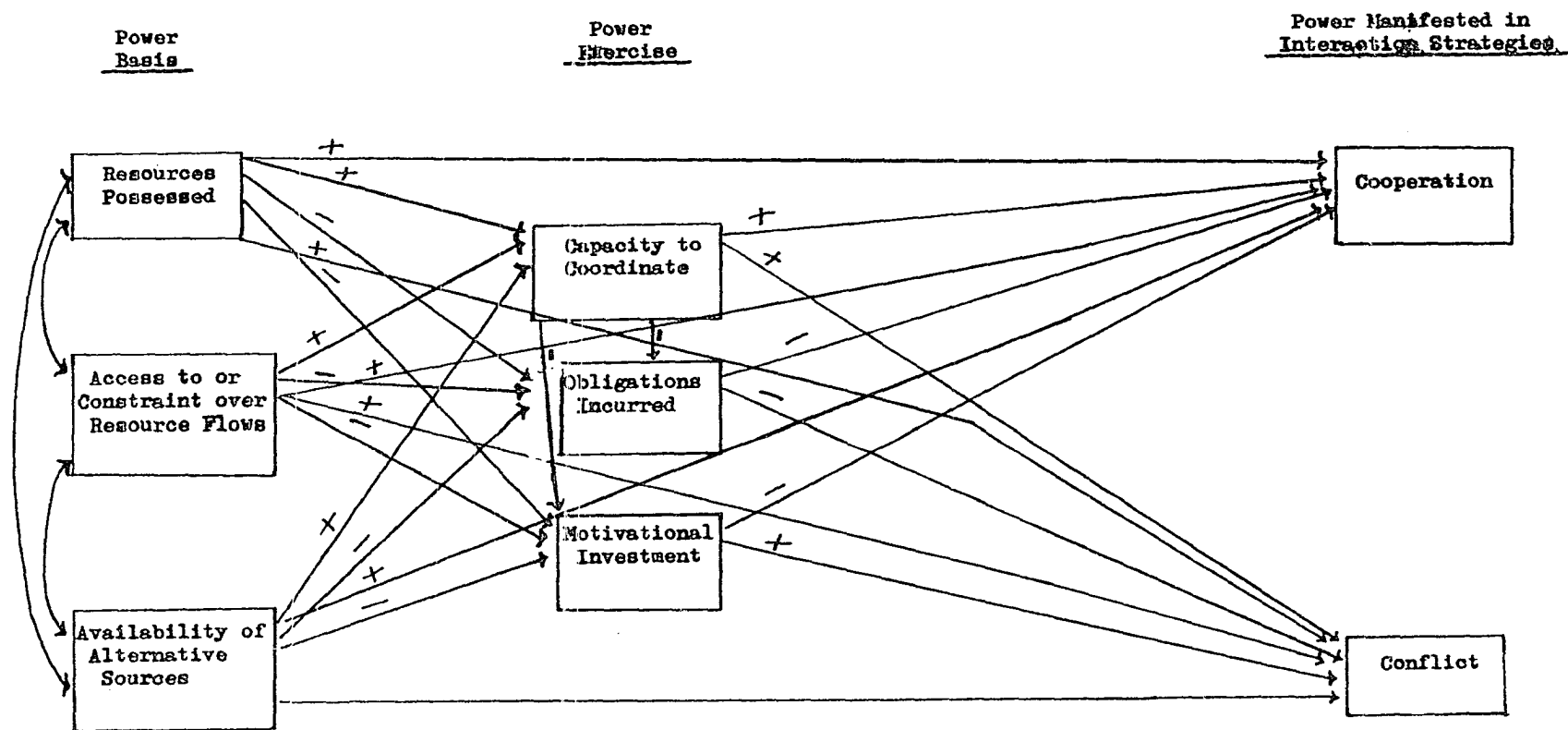


Figure 3.7

Revised causal model of the process of organizational power.

Null hypothesis: The population multiple correlation $\neq 0$

Alternative: The population multiple correlation $\neq 0$

In Chapter IV empirical hypotheses are specified that correspond to the general hypotheses in this chapter. Likewise, the empirical statistical hypotheses are presented. These four types of propositions are developed to insure integration of the theory and the appropriate measurement and statistics for empirical analysis. While many studies omit specification of the theoretical statistical propositions, it is an important element of the integration of theory, measurement and statistical analysis. Both the general propositions of the theory and the theoretical statistical propositions refer to the population of units of analysis. After statistical empirical analysis using a sample of units it is by means of the theoretical statistical propositions and model that inferences are made back to the population (Warren, Klonglan and Faisal, 1977).

CHAPTER IV. OPERATIONAL DEFINITIONS AND LINKAGES: METHODS AND PROCEDURES

Introduction

The theoretical concepts, propositions and the causal model of organizational power were presented in Chapters II and III. The process of building the theory of power is continued in Chapter IV. The objectives of this chapter are to present: (1) the operationalization of the units of analysis, concepts and linkages to guide the selection of indicators and procedures to bring concepts and propositions to an empirical level and (2) the methods and statistical procedures that can be used to assess the fit between the causal model and data.

Operational Definitions

The operational definitions that are developed in this chapter serve to specify procedures for identifying indicators that can be used to represent the meaning space for each of the complex concepts included in the dimensions of organizational power (Figure 2.2). The scope of meaning of each of the concepts was provided by the theoretical definition outlined in Chapter II. The operational definition is a bridge between an abstract concept and its indicator(s) and serves to outline procedures for developing measures to indicate the concept (Warren, et al., 1977). The theoretical concepts are complex and meant to apply across a variety

of social situations. Thus, there is no one proper operational definition for a theoretical concept and all possible operational definitions cannot be presented here. Rather, general operational approaches will be discussed for each of the complex concepts. A basic assumption is that the abstract concepts in the model of power are highly complex. Operationalization and measurement of the concepts must attend to this feature if indicators are to be valid. Thus much effort will be needed to identify indicators that will reflect all the dimensions of a concept. Given the complexity of the concepts involved indicators of a concept representing different dimensions will not necessarily be homogenous. In other words because they are apt to represent different aspects of meaning they will not always be highly intercorrelated. This dissertation is a model building effort. The intent is to document some progress in the definition of concepts and selection of measures that validly represent the concepts. The operational definitions and indicators specific to the concrete features of the particular set of data to be used in this study are presented to allow an assessment of the adequacy of the theoretical model and the specification of areas where further work in model building is needed. Specifically, the aim is to build an auxiliary theory that will allow its assessment against competing theories.

Approaches to measurement

The single indicator, multiple indicators and indexes are three basic approaches to measurement of theoretical concepts or unobserved variables (Jacobson and Lulu, 1974). The single indicator approach is the

simplest and uses only one indicator (measure) to capture the entire domain of meaning of a theoretical concept. This approach has the disadvantage of the need to assume that a single indicator accounts for most of the variation in the true variable and that the association of the true variable with another occurs only through the posited link with its single indicator.¹

The index procedure uses a combination of several indicators to build a composite or summary measure. While an index has the advantage over single indicators of being able to more adequately represent the meaning space of highly abstract, multidimensional concepts, there are disadvantages of using index measures. Namely, the problem of specification error can be exaggerated and adequate theoretical rationale for construction of summary measures is often lacking.

The multiple indicators approach, unlike the use of indexes, maintains the separate identity of each indicator throughout the analysis. While there are disadvantages to the use of multiple indicators, the advantages of more complete representation of the scope of meaning of highly abstract concepts, along with the opportunity afforded to test for differential bias, recommends the procedure for measurement of many sociological concepts, particularly highly complex concepts. For these reasons, I consider multiple indicators to be the most useful approach for measurement of concepts included in the theoretical construct, organizational

¹Jacobson and Lulu (1974) detail the advantages and disadvantages of all three approaches to the measurement of theoretical concepts.

power. Much of the efforts devoted to building a theory of organizational power must therefore be directed at the identification and evaluation of multiple indicators for the complex concepts subsumed by the power construct.

Although the potential advantages of using multiple indicators to measure complex concepts in causal models seem to outweigh disadvantages in comparison to the use of single indicators or indexes (Jacobson and Lulu, 1974), there are some disadvantages to their use.

One critical problem is that selection criteria ordinarily assume high intercorrelations within blocks and homogenous or consistent relationships across blocks (Costner, 1969; Sullivan, 1971). Costner's consistency criterion has been found to be too easily achieved when across-block intercorrelations are $< + .30$. And no test of the hypothesis of consistency has been developed (Mayer and Younger, 1975).

An equal number of indicators should also be selected for each concept in the model, especially for independent variables. Jacobson and Lulu (1974) have shown that unequal numbers of indicators can often result in misleading results due to problems of differential repetitiveness and unequal redundancy. The effects of several indicators, each highly correlated to the dependent variable, may partition out while fewer indicators of another unmeasured concept, although less strongly related to the dependent variable may remain in the model as significant effects.

A further problem is that indicators of highly complex concepts may not be highly intercorrelated, especially in the early stages of model development. When this is so, techniques based on the assumption of high

within-block correlations, cannot be used to assess measurement and specification error in a model. The problem of measurement error is a critical one for sociological research because of reliance on fallible instruments (Hiese and Bohrnstedt, 1970). Steps should be taken to adjust for errors of measurement in order to avoid erroneous conclusions. However, unless one can assume high intra-block correlations and consistent across-block correlations, specific procedures are not available for adjustments due to measurement error.²

A further problem of the use of multiple indicators in causal modelling involves assessing the fit between the model and data. Even with single models, the number of relationships that must be separately analyzed can be burdensome. In order to retain the advantages of multiple indicators for causal model analysis, a circumstance where they are needed most, Sullivan (1971) proposes the use of multiple-partial correlation coefficients. This is the procedure that will be used to analyze the block-recursive causal model of organizational power with multiple indicators.

Procedures for estimating the consistency or stability (reliability of measures) and the degree to which a measure captures the meaning of a theoretical concept of interest (validity of measures) also assume high

²Works by Warren, White and Fuller (1974) and Faisal and Warren (1970:a,b) provide a more complete elaboration of the application of the errors-in-variables procedure to correct for measurement and specification error in linear regression models.

within-block correlations and homogenous across-block correlations (Bohrnstedt, 1970). In the early stages of model building enough indicators may not be developed that represent all dimensions of complex concepts. In this circumstance indicators of single concepts may or may not be highly intercorrelated or correlated in the same way across complex concepts. Estimates of reliability of the measures are apt to not be available. And criteria for assessing the validity of measures should focus more on the adequacy of the auxiliary theory that is developed for a specific empirical analysis (Blalock and Blalock, 1968) than on statistical procedures that assume high interrelationships among indicators of a complex concept. In later stages of model building, when a number of indicators have been developed for each complex concept, these procedures will more likely be applicable to estimate the validity of indicators for separate dimensions of the complex concepts.

Because this study utilizes secondary data, a limited number of indicators are available. The indicators of single concepts are not always expected to be highly intercorrelated. Thus the indicators are apt to not meet the assumptions required to empirically assess the validity of measurement of the complex concepts subsumed by the process of inter-organizational power.

Formal organizations - the units of analysis

The concepts included in the theory of organizational power characterize the relations of organizations as actors. In theoretical terms, organizations are collectivities of individuals where mechanisms of

integration are formally defined (Blau and Scott, 1962). These formally organized collectivities have divisions of labor which specify a plurality of different positions and are actively seeking to accomplish certain tasks. In operational terms, organizations are fixed as to time and space, have a specific name and location, have a published statement of mission and goals and an organizational chart of positions with descriptions of role expectations for incumbents.

The empirical units of analysis used to evaluate the causal model are county natural resource organizations located in five counties in Northeast Iowa in 1976. The five Northeast Iowa counties; Howard, Winnebago, Allamakee, Fayette and Clayton; were selected because of the unique character of their natural resources.

The major criteria used in selecting agencies for the study were: (1) that an agency have at least county-wide responsibility and (2) that it be involved in managing natural resources or have programs that related to the use of natural resources. The park managers of the three largest urban areas in the region also were interviewed. The twelve agencies studied were: Agricultural Stabilization and Conservation Service (ASCS); Farmer's Home Administration (FmHA); Soil Conservation Service (SCS); Cooperative Extension Service (CES); County Conservation Board (CCB); County Engineer's Office (CEO); Fish and Game Enforcement (FGE); District Forest Unit (DFU); Fish Management Biology Unit (FMB); State Park Ranger (SPR); State Forest Administrative Unit (SFA); and Wildlife Biology Unit (WBU). In each agency the top administrator was interviewed.

Not every agency had a local unit in each of the counties studied, therefore the total number of units studied was 39. In instances where an agency had multicounty responsibilities, it was included in the county where its office was physically located. Units of the FmHA, DGE, DFU, FMB and WBU were so classified. One District Forester worked in two of the study counties, but his office was located outside the study area. The interview in this situation was conducted within the context of the study county where the forester was most active and most familiar. A brief description of each of the agencies follows.

Agricultural Stabilization and Conservation Service Agricultural Stabilization and Conservation Service (ASCS) is a United States Department of Agriculture (USDA) agency and is organized on a county basis. It provides cost-share funds (50 to 75 percent) to landowners who install permanent soil and water conservation practices on their land designed to control erosion and to prevent siltation and waste pollution. The major practices covered by cost-sharing include construction of lagoons, pits, settling basins, terraces, diversions, dams, ponds, permanent grass cover, sod waterways, buffer strips and tree plantings and timber improvement. A proportion of their funds (about 5 percent) is allocated to the Soil Conservation Service for technical assistance. The Forest Incentive Program (cost-share ranging from 50 to 75 percent) is designed to encourage tree planting and timber stand improvements in selected counties; an Iowa Conservation Commission District Forester provides planning and technical assistance for this program. In this program, a primary client is the smaller private forest owners. Forest improvement practices supported

through the program include planting trees and improving timber (e.g., thinning, pruning, release of seedlings and site preparation).

Farmer's Home Administration The Farmer's Home Administration (FmHA) is a USDA agency that makes many different types of loans to groups and individuals. Loans may be secured by rural communities seeking to develop water supply and sewage systems. Resource Conservation and Development loans are made to public bodies and to nonprofit corporations for open space acquisition, recreation development and water supply projects. FmHA soil and water loans support a variety of activities including farm pond construction and repair, building dikes, terrace and erosion control structures, land treatment practices and the establishment of permanent pastures and farm forests. Recreation loans are made to assist eligible farmers who wish to convert their land to income-producing recreation enterprises including swimming, fishing, boating and camping.

Soil Conservation Service The Soil Conservation Service (SCS) assists conservation districts, communities, watershed groups, federal and state agencies and other cooperators with erosion control and water management problems by bringing about needed physical adjustments in land use. Its purpose is to conserve soil and water resources, improve agriculture and reduce damage caused by floods and sedimentation. The service provides technical assistance for these programs to individuals, groups and governmental bodies at the county level through the 100 soil conservation districts in Iowa. The conservation districts are administered by the Iowa State Department of Soil Conservation. These districts receive state funds through the Department of Soil Conservation.

The Soil Conservation Service provides technical assistance for conservation operations, soil surveys and river basin surveys. It also provides technical and financial assistance for the watersheds and flood prevention program (small watershed program) and resource conservation and development projects (RC & D). Assistance to the small watersheds and RC & D projects is provided through local sponsoring groups.

Cooperative Extension Service Education is the goal of a fourth USDA agency - Extension Service (CES). County Extension programs assist residents, particularly farmers, in interpreting problems and in applying technology based on research. Major educational programs include those dealing with pollution, land use planning and conservation and development of natural resources (soil, water, mineral). Area or office specialists are available to assist county personnel with specific needs or problems and to provide special services. Extension personnel work with other USDA agencies in supplying information on conservation-oriented farming practices, particularly with regard to plowing practices and the application of pesticides.

County Conservation Board County Conservation Boards (CCB) are established in 98 Iowa counties, including four of the five counties in the study area. County governments, working through conservation boards are authorized to acquire, develop, maintain and make available to residents of the county, public parks, preserves, park ways, playgrounds, recreation centers, forests and wildlife and conservation areas and to encourage the development of natural resources. The Executive Officer of the Board is responsible for carrying out policies established by a three-member park board and makes day-to-day decisions about the management of

county lands and parks. The State Conservation Commission advises and counsels management and planning activities and reviews large (over \$2,500) acquisition and development expenditures and plans.

County Engineer's Office Only one of the counties in the study has adopted a zoning ordinance; therefore, the County Engineer's Office (CEO) was included in the study because it often is the unit that handles problems associated with land use. This office also is responsible for the design and maintenance of county roads and bridges. The Engineer's Office also is responsible for enforcing county sanitation ordinances, particularly landfill and sewage disposal regulations. It frequently relates to the provision of public recreation facilities, stream channelization and waterway diversion because of its assigned responsibilities.

Fish and Game Enforcement Fish and Game Officers (FGE) are employed by the Iowa Conservation Commission in each county. As peace officers, they are responsible for enforcing the state's fish and wildlife laws, including licensing, capture limits and other regulations. Some of their other duties include field surveys, hunter safety programs and investigations and local public relations.

District Forester The objectives of the Forestry Section of the Iowa Conservation Commission are to foster environmental protection and to ensure economic and social benefits from trees, forest lands and related resources. Twelve forestry units are distributed across the state. District Foresters (DFU) provide technical management advice to landowners on questions about forestry practices and particularly in the development of forestry management plans. Foresters are responsible for the technical

phase and inspection of ASCS cost-share forestry practices, including tree-planting and timber stand improvement. Through a state tree farm program management recognition is given to landowners involved in continued production of a forest crop. The district Forester works with other sections of the Conservation Commission on forest management of state lands.

State Park Ranger Unit The State Park Ranger (SPR) is charged with preserving and maintaining state parks and preserve areas. Park rangers are stationed at the State's larger holdings and oversee the maintenance and security of these areas. Rangers are responsible for maintaining the parks as refuges for fish and wildlife, as well as providing recreation opportunities for the general public.

State Forest Administration Unit The Yellow River State Forest is a 5,800 acre multiple-use area. The unit manager's responsibilities include management of game and forested acreage, operation of a sawmill and the maintenance and supervision of recreational facilities. The forest serves as a research and demonstration area for state land management practices and forest management training seminars for area and state resource managers.

Fish Management Biologist Unit The object of the Fish Management Biologist Unit (FMB) is to improve fishing and to bring about a greater harvest of fish from existing waters through the latest scientific fish management techniques. Fish Management Biologists provide a variety of services to other sections of the Conservation Commission as well as to private landowners. They participate in the planning and management of

a trout stocking program, private farm pond planning and fish population management. The Mississippi River presents special problems in terms of pollution management, commercial fishing supervision and dredge spoils management. These units are directly responsible to the Fisheries section of the Iowa Conservation Commission.

Wildlife Biologist Unit The Wildlife Biology Unit (WBU) provides wildlife management support in the form of land and water management, the recreational harvest of animals and by providing technical assistance to state and local units. The Wildlife Biology Unit is particularly concerned with maintenance of wildlife habitat on private land. Its objective is to provide opportunities for game harvest without jeopardizing the species involved. Personnel in the 20 Wildlife Biology units in the state study animal populations to establish game seasons. The Wildlife Section of the Iowa Conservation Commission manages lands designated as game management areas.

Data were collected through personal interviews with the 39 top administrators in these agencies. Data were originally collected for the study, "Interagency Planning for Natural Resource Management" which was funded by the Iowa Agriculture and Home Economics Experiment Station (Project 102-40-73-73-2042), Iowa State University, Ames, Iowa. Dr. David Rogers was the principal investigator and directed the research to answer the general question, "Is the present use and development of natural resources in the five-county area an unintended outcome of numerous public agencies or the intended outcome of coordinated actions by relevant agencies?".

Basis of power - control of relevant resources

The control of relevant resources as the basis of differential power among organizations has been defined theoretically as the capacity to hold resources for conversion to influence social action. The capacity to hold resources is reflected in the total amount and kind of resources possessed, total constraint over the flow of resources in the system and the total availability of alternative sources of valued resources compared to other organizations in a network.

Possession of resources Resources possessed are defined as those commodities or attributes held or owned by an organization that are valued and needed for goal attainment. Operations of the type of resources that are valued by organizations must be determined. Indicators of resources possessed can then be developed to reflect the number of different valued types, the amount of each valued type and the degree of value as comparative properties of the relations between organizations.

Thus, valued resources can be described in concrete situations as those resources that boundary spanning units and/or top administrators report are valued or needed by the organization to meet its goals. In operational terms, resources possessed are those valued resources that the top administrators report that organizations have in their possession.

Another approach is to determine valued resources based on the reports of boundary spanning units of all organizations in a particular set of organizations. Operationally, the extent of value of a resource is quantified by the number of votes it receives by organizations in the set. Amount and type of resources with specific extents of value are then determined from the reports of boundary spanners.

Possession of resources can also be operationalized by obtaining the perceptions of top administrators and/or boundary spanners concerning the degree organizations suffer from scarcity of specific valued resources which constrains the organization's effectiveness. This approach assumes that resources perceived to be scarce are also valued resources.

It is apparent that possession of resources is a complex concept which encompasses a number of dimensions of meaning in terms of resources that are valued and scarce. This means that a number of indicators are needed to validly measure the concept. Furthermore, indicators that are valid will reflect all aspects of meaning and will not necessarily be highly interrelated.

In this study resources possessed was operationalized by asking top administrators of the natural resource agencies to state the actual amount of the agency's operating budget and to rate the perceived scarcity of budget. Actual budget and perceived scarcity of budget were thus selected as two separate indicators of resources possessed. These indicators only reflect the amount of one type of resource possessed. It is assumed that money available for agency operations is a resource valued by all the natural resource agencies (Benson, 1975).

However actual budget and perceptions represent two different dimensions of resource possession and are not expected to be highly correlated. It is likely that administrators will sometimes perceive scarcity for the organization's budget even when dollar accounts are large and perceive no scarcity when dollar amounts are small, depending upon the nature of goals and services.

Top administrators were asked:

- (1) What were your organization's total operating expenditures for the previous calendar year (actual amount in dollars)? and
- (2) How strongly do you agree with the following statement as a limitation on the overall effectiveness of your organizational unit?
 - (a) Our budget is too small (1-very strongly agree, 2-strongly agree, 3-agree, 4-no opinion, 5-disagree, 6-strongly disagree, 7-very strongly disagree)

Scores were computed for each measure as comparative characteristics of the relations of each organization with other organizations in its county set. Comparative values were calculated by finding the difference between the score of each organization and the score of each other organization in the county, and summing them together to form a single score for the focal organization's relations. For example, if county X had organizations A, B, C and D within its boundaries; the comparative budget of A in its relations with B, C and D equals $(A_B - B_B) + (A_B - C_B) + (A_B - D_B)$.³ The actual size of budgets determine the theoretical range of values for comparative actual budget.⁴

³Log transformations were performed on actual operating budget scores prior to obtaining total difference scores.

⁴The total comparative scores for each variable in the study were corrected for the unequal number of organizations in the five counties by dividing by $n-1$, where n = the number of organizations in the county set. Scores for each measure were transformed to positive values by setting the highest negative value = 0 and adding the difference between that value and 0 to every other value.

The actual range of comparative actual budget scores is 0 to 2.899.

The theoretical range of values for perceived budget scarcity is 0 to 7.

The actual range of comparative perceived scarcity of budget is 0 to

7.44. The descriptive statistics for both comparative measures are provided in Chapter V.

Access to and constraint of resource flows

Access to and con-

straint of resource flows was operationally defined as the location of an organization within a network regarding its connectedness, which is strategic for mediating resources to and from the other organizations. Operations of access and constraint should be aimed at the degree of connectedness by exchange interactions among boundary spanners and/or top administrators. Interactions among directors and information exchange are types of exchange activities (Rogers, 1974a).

One assumption is that an organization in the center of interaction and information activity within a network can often gain access to or constrain the flow of other valued resources to other organizations without actually possessing the resources (Burt, 1977:292). Degree of centrality in terms of connectedness with other organizations is the variable of interest here. The underlying variable is the extent an organization is in a central position of connectedness compared to other organizations - the degree other organizations must use it as a transitive link for resource flows. Operations of connectedness are sociometrics of exchange interactions among organizations (Rogers, 1974b). Network analysis, graph and digraph theory are techniques used to determine path distances and measure the centrality of an actor in a system (Laumann and Pappi, 1976:20-21).

Another approach is to conceive of access to and constraint of resource flows as positive or negative connectedness. Operations here must discern connections where exchanges are contingent upon other exchanges in the other from connections that are contingent upon nonexchanges in the other (Cook and Emerson, 1978). Operations of positive and negative connectedness must get at whether or not exchange in one connection does or does not preclude exchange in another.

Access to and constraint of resource flows was operationalized in this study as the total director interaction and information exchange an organization initiated and received from other organizations in its set. Two separate measures were constructed - one based on director interactions and one based on information exchanged. The assumption was that organizations whose relations with other organizations were characterized by receipt and initiation of comparatively more director interaction and information exchanges would have relations with greater access to and constraint over resource flows. Director interactions and information exchanges are viewed as reflections of a single dimension of the relative structural constraint (centrality) organizations have over resource flows in a network. Therefore, we expect the two indicators of centrality to be highly interrelated.

Top administrators were asked:

- (1) In the past year how many times have you been in contact with the director of any of the following organizations to discuss activities of your respective organizations (all organizations in the county were listed)? and

- (2) In the past year how many times did your organization provide information to each of the following groups about your activities through personal letters, reports or other documents (all organizations in the county were listed)?

Comparative scores were computed by subtracting the total times director contacts (and information) were initiated and received for each organization from the same total for each other organization and summing the differences for each organization. The scores for each organization were divided by the number of organizations in its set minus one (1). The actual range of comparative director interaction values is 0 to 985. The range of actual values for comparative information exchanges is 0 to 575. The descriptive statistical information for both measures are presented in Chapter V.

Availability of alternatives Availability of alternatives refers theoretically to the number of sources available to an organization for obtaining needed resources and to the number of different options available to an organization for disposal of its outputs. Number of different funding sources, number of potential exchange partners for specific resources available to an organization within the outside the network, number of different sources of legitimation and positive reputation are examples of empirical observations to be considered for operations of availability of alternative sources of resources. Various aspects of organizations' domains should be considered for the operations of alternatives for disposal of outputs. The number of different broad type of services or products offered, the number of different client or consumer

groups served and the number of different technical activities performed are examples.

In the study the availability of alternatives was operationalized as top administrators reports of the sources (federal, state, county, fees, other) from which they obtain operating funds and the different client groups the agency serves. Two separate measures were constructed, one which taps alternatives for inputs on one which indicates alternatives for outputs. The number of sources of operating funds was selected as an indicator of the degree of availability of alternative sources of resources. The number of client groups served by the agency was selected as an indicator of the degree of availability of alternatives for disposal of outputs. Alternatives for inputs and alternatives for outputs relative to other organizations are both aspects of the options available to organizations as a basis for power relations. However, they each represent a separate dimension of the availability of alternatives. Therefore, valid measurement of each aspect should be reflected by indicators of each that are not highly intercorrelated. Furthermore, each indicator may not have the same relationship with other concepts indicators.

Administrators were asked:

- (1) What proportion of your funding came from each of the following sources (federal, state, county, fees/assessments/transfers, other)?
and
- (2) Please indicate which of the following categories describe the groups your organization serves (describe = 1, not describe = 0).
(a) farmers, (b) private industry, (c) recreational users, (d) non-farm landowners, (e) park users, (f) homeowners, (g) local agencies,

and (h) other.

Comparative scores were computed by subtracting the number of different funding sources (and number of different client groups served) for each organization from the number for each other organization and summing the differences. The actual range of values for the comparative number of funding sources is 0 to 3.44. Actual comparative values for number of client groups served range from 0 to 7.09. The descriptive statistical information for both comparative measures are presented in Chapter V.

Exercise of power - conversion of resources for goal attainment

The exercise of power is defined theoretically as the ability to convert or mobilize resources for social action. The ability to mobilize resources to effect social action is reflected in the capacity of the organization to coordinate its subunits, the number of obligations incurred in relations with other organizations and the motivational investment in these relations, compared to other organizations in its action set.

Capacity to coordinate subunits The capacity to coordinate activities of its subunits refers theoretically to the degree the collectivity has the potential to be socially organized as an energy binding system. Capacity to coordinate subunits is the amount of potential organizations have to be internally coordinated for a desired collective action. The degree an organization has the potential to "bind in energy" as power exercise is thus reflected in the number of functions subunits or specialized roles that can be coordinated and the means available to coordinate

the separate subunits for collective effort.

Theoretical discussions of the degree organizations are divided into subunits ordinarily are included under conceptions of the degree of horizontal complexity or horizontal structural differentiation of organizations (Price, 1972). Discussions of "division of labor," "specialization," "role differentiation," "functional differentiation," "segmentation," "fragmentation," and "departmentalization" contain ideas relevant to the extent organizations are divided into subunits.

The notion that coordination is a function of the ability of management is a critical theme in organizational theory (Hall, 1977). It is assumed that the ability of management to effect control influences the degree that subunits are coordinated for a collective purpose.

There are several operational approaches available for selecting indicators of the degree organizations are divided into subunits. One approach is in terms of the number of specialized occupational roles and degree of specialized preparation of role occupants within the organization. Another is to define number of subunits in terms of the number of separate functional departments or specialized functional units. Another is to define operations of capacity to coordinate subunits as the number of separate positions in an organization. An additional approach is to view the number of separate goals as the referent for segmentation (Haas, Hall and Johnson, 1967).

Operations of the means to effect coordination ordinarily center on the characteristics of managers interpersonal or decision-making behaviors of managers to effect control (Hall, 1977) or on organizational characteristics that enhance communication feed back.

In this study the capacity to coordinate subunits is operationally defined as the number of positions in the organization reported by agency administrators and as the amount of education of the top administrator. Hage (1974) argues that mechanisms of communication and criteria vary with complexity. The idea that managers function to elicit compliance from individuals and subunits is advanced by Etzioni (1975). He argues that managers are more effective in gaining compliance if they are able to match structures and types of leadership with the types of goals for which they are suitable. In all cases it seems reasonable that an organizations ability to effect coordination should in part be reflected in the administrators knowledge of the appropriate means to elicit compliance from subunits which in turn should be reflected in the education of the administrator. Administrators responded to the following questions for the two measures of capacity of the capacity of the organization to coordinate subunits.

- (1) What paid positions (job titles) exist in your local agency? and
- (2) Please indicate the highest level of education that you have achieved (highschool-1, some college/technical-2, college degree-3, graduate work-4, graduate degree-5).

These measures of capacity to coordinate are expected to be moderately correlated, representing different dimensions of an organization's potential to bind in energy.

Comparative scores for each organization were computed by subtracting the number of job titles (and education score) reported by each organization from the number reported by each other organization in the set and

summing the differences to form a total difference score for each indicator for each organization. The actual range of values for the comparative number of job titles ranged from 0 to 8.89 and the actual range of administrator education was 0 to 4.6. The descriptive statistical information for the two measures are reported in Chapter V.

Obligations incurred Obligations incurred by an organization are defined theoretically as the extent a negative balance is experienced in the reciprocity of exchange relations or the extent obligatory debts are accumulated.

The operational referrent for obligations incurred is the reciprocity ratio of valued resources exchanged by organizational actors. The inclusion of all exchanges of valued resources and the extent of value of each resource, as defined by organizations, in the calculation of the ratio of reciprocity would be the most adequate representation of the extent of obligations incurred by an actor.

Another approach is to define extent of obligations incurred in terms of the rank, prestige or status conferred on an actor by others. Actors that maintain a positive balance in resource exchanges are awarded social esteem, status or privilege by others in order to achieve reciprocity (Blau, 1964). The greater the obligations incurred, the less the rank or prestige that is needed to be conferred on the actor by others to achieve reciprocity. In the theoretical explication of the power process for this dissertation, however, prestige is viewed as an ultimate manifestation of power relations and as such would not be appropriate to indicate extent of obligations.

For this study, the operational definition of obligations incurred is the aggregated balance of resources (funds, facilities or personnel) exchanged by an organization in its relations with other organizations in its set. Top administrators were asked to report on the number of times funds, facilities or personnel were loaned or provided to each other organization in its set over the past twelve months. A single comparative measure was obtained for each organization. The number of times resources were provided for B by A was subtracted from the number of times B provided resources for A. (Resources provided, greater than resources received, equals negative obligations). A total comparative score for each organization was calculated by summing the differences in the number of times resources were provided in each dyad relationship. Actual scores ranged from 0 to 144.83. Chapter V contains the descriptive statistical information for the measure.

Motivational investment Motivational investment is theoretically defined as the extent of commitment to a particular relationship. Motivational investment is the extent a relationship is viewed as necessary or essential for obtaining needed benefits. The degree of importance assigned to a specific relation compared to alternative relations is one acceptable operation of the extent motives are invested in a particular relationship by an organization. Another approach is to operationally define motivational investment as the reported degree benefits accrue to an organization from a particular relationship that cannot be obtained from relationships with other organizations in the action set. Another approach is to define operations of motives invested as the extent organizations report they are committed to specific relationships through shared

goal values, formal and informal agreements.

In this study the importance to their work that organizations report they assign to contacts with other organizations is the operational definition of motivational investment. Top administrators responded to the question:

- (1) How important are the contacts with each of the organizations to the work of your organization?

Responses were assigned on a four-point Likert scale (1-not important, 4-very important). Comparative scores were developed by subtracting the importance value assigned by the focal organization to the counter organization in each dyad from the value assigned by the counter organization to the focal organization. A single comparative score for each focal organization's relations with all other organizations in its set was formed by summing the difference across all dyads for each focal organization. The theoretical range of values was 0 to 3 for each dyad and actual value ranged from 0 to 3. Actual total comparative values ranged from 0 to 5.6. Descriptive statistics for the measure are presented in Chapter V.

Organizational interaction strategies

Interactions among organizations are theoretically defined as linkages of cooperative exchange and/or conflict that emerge among organizations as they attempt to manipulate and control environmental contingencies. The specific patterns of interorganizational linkages that emerge are the result of organizations' abilities to control and convert resources vis-a-vis other organizations in their immediate environment.

Interorganizational interaction strategies that can be selected to enhance or balance power relations include cooperation, conflict, circumvention and withdrawal (Blau, 1964; Jacobs, 1974). Only the operationalization of cooperative and conflict strategies are discussed and analyzed in this study.

Cooperative strategies Cooperative interaction is defined theoretically as a mutually reinforcing voluntary interaction used by organizations as a strategy to gain or balance power relations that can be asymmetrical in terms of the amounts and types of resources exchanged and which varies according to the potential loss of autonomy or power for both actors. An organization that uses a cooperative strategy to gain or balance power must demonstrate its capacity to reduce uncertainty for another actor and "must make a commitment to exchange that capacity." Cooperative interaction strategies to gain or balance power include contracting, coopting and coalescing (Thompson, 1967).

In operational terms, cooperative interactions include interactions among organizations carried out by boundary spanning units (i.e., administrators), including agreements to exchange resources, share decision-making personnel and programming. Cooperative interaction strategies are identified as those cooperative interactions that are initiated by an organization in its relations with other organizations. Operationally, contracting strategies include contacts reported by top administrators or other boundary persons which define the extent of commitment for future exchanges of information, personnel or other resources. Reported contacts can range from informal unwritten understandings to formal written contracts and

legal mandates for future exchanges. The reported number of representatives of other organizations on the organization's decision-making boards or advisory committees constitutes operationalization of cooptation as a cooperative strategy. Coalescing, operationally, is the number of specific programs and ventures that organizations share and pursue with other organizations as one decision-making unit. Operationalization of these strategies could be accomplished by observation of an organization's official documents, minutes of meetings, memoranda, etc. or by the reports of organization officials.

In this study one cooperative interaction strategy is analyzed - coalescing. Selection of a coalescing strategy is defined operationally as the number of joint programs with other organizations reported by administrators. Top administrators were asked to report the actual number of joint programs their organization shares with each other organization in the county set for a one year period. Comparative scores were formed by subtracting the number reported by each counter organization from the number reported by the focal organization. The differences across all dyads in the set were summed for each focal organization to construct a single comparative score. The actual range was 0 to 24.6. Descriptive statistics for the measure are reported in Chapter V.

Conflict strategy Conflict has been defined theoretically as opposing responsibilities, priorities or actions between two organizations. The use of conflict by an organization to gain or balance power ordinarily involves interactions initiated by the organization to oppose or block input resources, goals or programs of other organizations. Conflict strategies include indirect opposition such as opposing philosophies,

objectives and priorities, as well as direct actions of opposition and competition.

Operations of interorganizational conflict are conflicting responsibilities, priorities programming and disagreements and disputes among organizations that are observed or reported by organizations. Further operations would be to assess the specific opposing benefits, attitudes and actions taken by organizations regarding particular interorganizational issues of organizations compared to others in their set.

In this study the extent of selection of a conflict strategy is operationally defined as the extent administrators report that responsibilities and priorities of the organization are in conflict with those of other organizations and the extent the organization has disagreements and disputes with other organizations. Top administrators were asked:

- (1) To what extent have conflicting responsibilities or priorities affected the relationship between your organization and each of the following? and
- (2) To what extent do disagreements or disputes characterize the relations between your agency and each of the following?

Responses for each item were assigned on a six-point Likert scale (0-none, 1-very little extent, 5-very great extent). Comparative scores were constructed by subtracting the conflict value assigned by the focal organization to the counter organization in each dyad from the value assigned by the counter organization to the focal organization. Two comparative scores for each focal organization's relations with all other organizations in its set was formed by summing these differences across all dyads for each focal organization for each measure of conflict. The

theoretical range for each dyad relation was 0 to 10. Actual total comparative scores ranged from 0 to 3.0 for conflicting priorities and responsibilities and from 0 to 8.22 for disagreements and disputes. Descriptive statistics for these measures are reported in Chapter V.

Operational Linkages

Now that operationalization of theoretical concepts in the general hypotheses and causal model has been discussed, operational linkages and empirical hypotheses can be specified. The empirical hypotheses (E.H.) that are specified have to do with relationships between variables and correspond to theoretical propositions or general hypotheses one through five presented in Chapter III. Two empirical hypotheses are presented for concepts posited as dependent variables that have two indicators. For the readers convenience notations used for the concepts and indicators are presented in Table 4.1.

The diagram of complex concepts forming the dimensions of the process of interorganizational power and indicators used in the study along with the causal model are also presented a second time in Figures 4.1 and 4.2. The notations contained in Table 4.1 are added to each of the figures.

Empirical hypotheses

E.H.1.a. The total number of different positions (COMPLX) reported by an administrator compared to the total number reported by each other

Table 4.1 Notations for the concepts and indicators included in the model of organizational power.^a

Concepts (Blocks)	Reference Code	Indicators	Reference Code
Resources possessed	RESCRS	Actual budget	BUDG
		Perceived budget scarcity	PBDG
Access to and constraint over resource flows	CONSTR	Centrality-director interactions	CENTA
		Centrality-information exchange	CENTB
Availability of alternatives for resource inputs and outputs	AVAIL	Number of fund sources	FUNDS
		Number of client groups	CLNTG
Capacity to coordinate subunits	CAPCRD	Number of positions	COMPLX
		Education of administrator	EDADM
Motivational investment	MOTIVATS	Importance of contacts	MOTIV
Obligations accumulated	OBLIGATS	Excess of resources provided over received	OBLGS
Selection of a cooperative strategy	COOPER	Number of joint programs	COOPA
Selection of a conflict strategy	CONFLICT	Extent conflict responsibilities	CONFLA
		Extent disagreements, disputes	CONFLB

^a All concepts and indicators are conceived and constructed as total comparative variable characteristics of organizations in an organizational network.

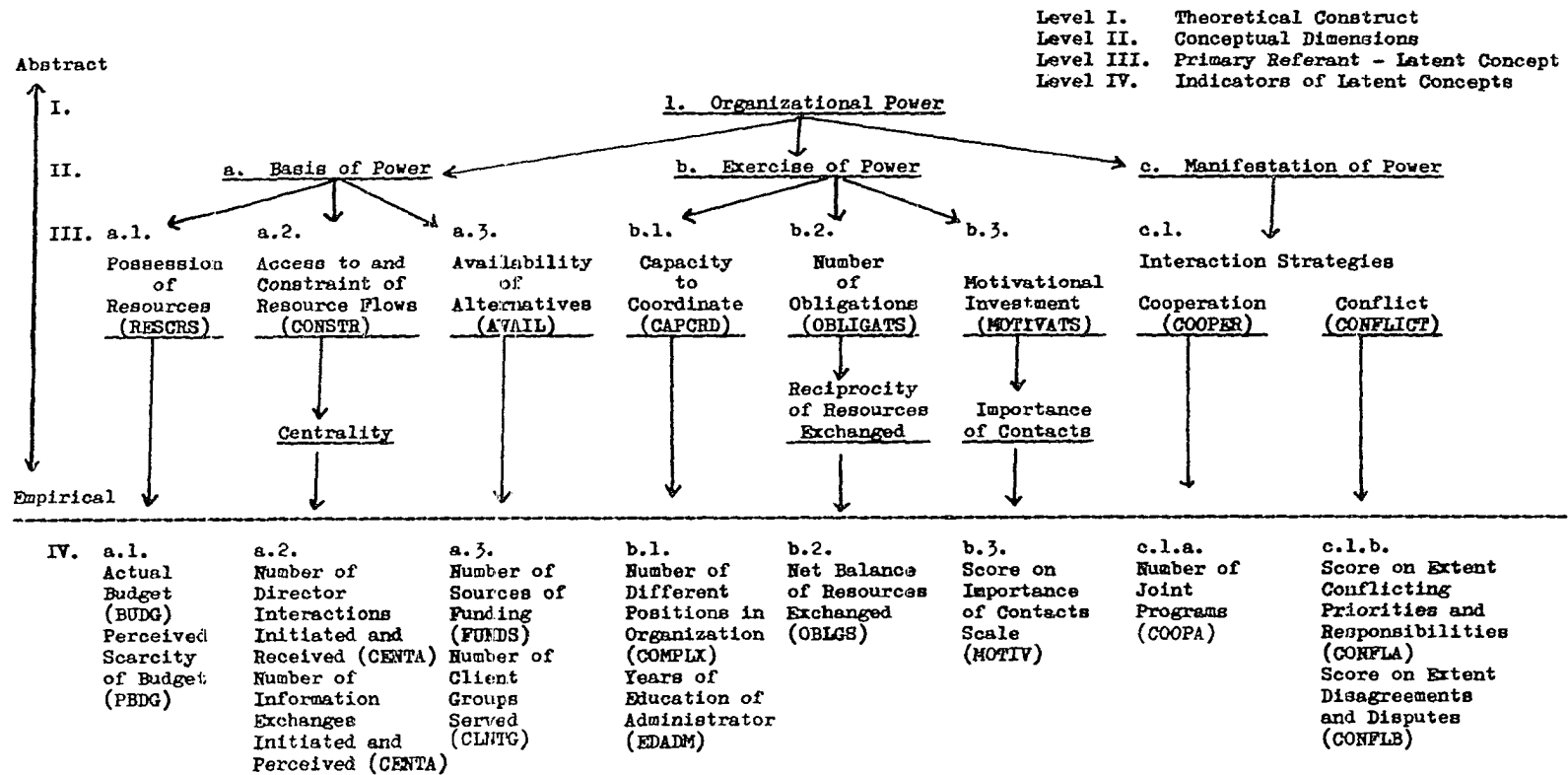


Figure 4.1

Diagram of dimensions of organizational power, latent concepts and indicators.

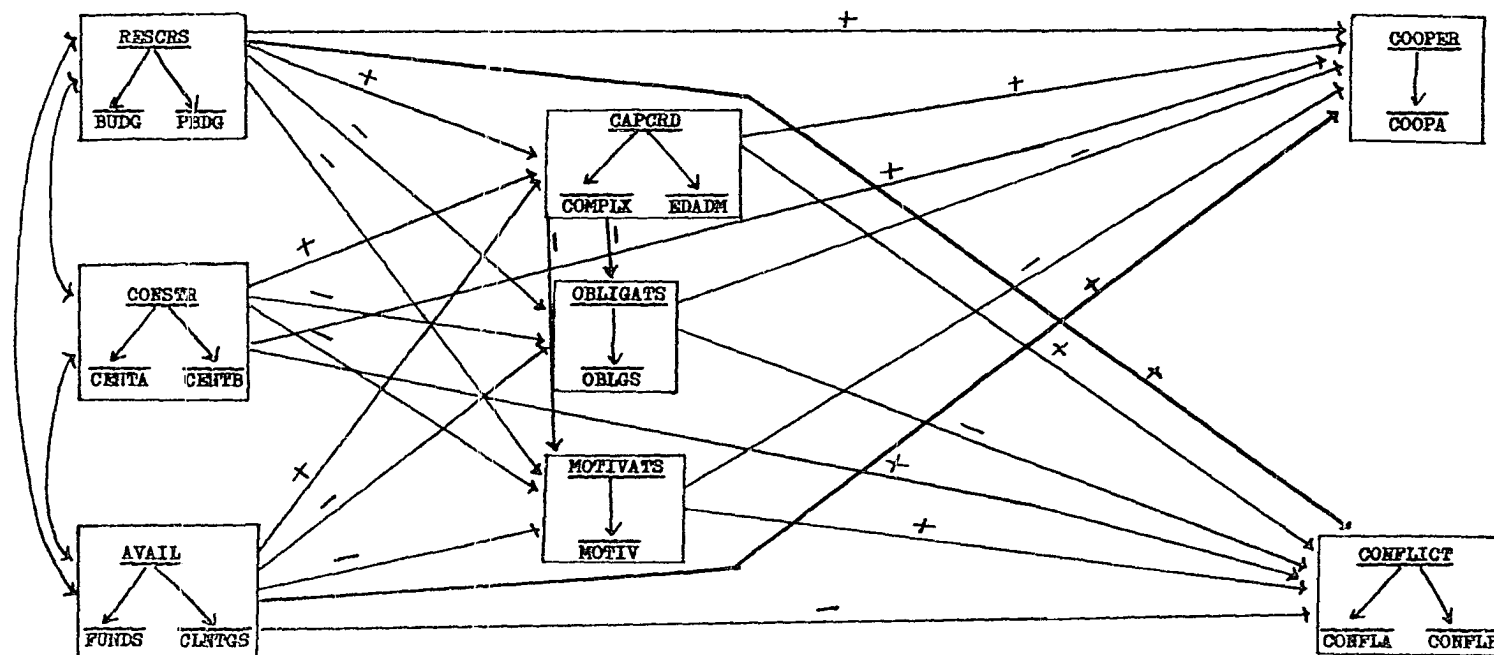


Figure 4.2

The causal model of the process of organizational power, including notations for latent concepts (blocks) and indicators.

administrator in a county is a positive linear function of the combined effects of the actual operating budget (BUDG) perceived scarcity of budget (PBDG), the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of sources of funding (FUNDS) and the number of client groups served (CLNTG) reported by an administrator compared to those reported by administrators of other organizations in the county, the effect of each is significant.

E.H.1.b. The total education of an administrator (EDADM) reported by an administrator compared to the total education reported by each other administrator in a county is a positive linear function of the combined effects of the normal operating budget (BUDG), perceived scarcity of budget (PBDG), the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of sources of funding (FUNDS) and the number of client groups served (CLNTG) reported by an administrator compared to those reported by administrators of other organizations in the county, the effect of each is significant.

E.H.2 The total of the number of times resources were received by an organization from other organizations minus the number of times resources were provided by an organization to others as reported by administrators (OBLGS) is a negative linear function of the combined effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG), the number

of times interactions were sent and received by administrators (CENTA), the number of times information was sent and received by administrators (CENTB), the number of sources of funding (FUNDS), the number of client groups served (CLNTG), the total number of different positions reported by an administrator (COMPLX) and the total education of the administrator (EDADM), compared to those reported by administrators of other organizations in the county, the effect of each is significant.

E.H.4. The total of the degree of importance of contacts (MOTIV) with other organizations reported by administrators compared to importance reported by other administrators is a negative linear function of the combined effects of the actual operating budget (BUDG) perceived scarcity of budget (PBDG), the number of times interactions were sent and received by administrators (CENTA), the number of times information was sent and received by administrators (CENTB), the number of sources of funding (FUNDS), the number of client groups served (CLNTG), the number of different positions reported by an administrator (CONPLX) and the total education of an administrator (EDADM) compared to those reported by administrators of other organizations in the county, the effect of each is significant.

E.H.5. The total number of joint programs reported by an administrators (COOPA) compared to the total number reported by each other administrator in a county is a linear function of the combination of positive direct effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG), the number of times interactions are sent and received by

administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of sources of funding (FUNDS) and the number of client groups (CLNTG), the number of different positions reported by an administrator (COMPLX) and the total education of an administrator (EDADM) and the negative direct effects of the number of times resources are received from minus provided for other organizations (OBLGS) and the total of the compared degree of importance of contacts with other organizations (MOTIV) reported by administrators compared to those reported by other administrators in its set, the effect of each is significant.

E.H.5.a. The total comparative extent of conflicting responsibilities score (CONFLA) is a linear function of the combination of positive direct effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG), the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of different positions reported by an administrator (COMPLX), the total education of an administrator (EDADM), and the total of the compared degree of importance of contacts with other organizations (MOTIV), and the negative direct effects of the number of sources of funding (FUNDS), the number of client groups served (CLNTG) and the number of times resources are received from minus provided for other organizations (OBLGS) as reported by administrators compared to those reported by other administrators in its set, the effect of each is significant.

E.H.5.b. The total comparative extent of disagreements and disputes score (CNFLB), is a linear function of the combination of positive direct effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG), the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of different positions reported by an administrator (COMPLX), the total education of an administrator (EDADM), and the total of the degree of importance of contacts with other organizations (MOTIV), and the negative direct effects of the number of sources of funding (FUNDS), the number of client groups served (CLNTG) and the number of times resources are received from minus provided for other organizations (OBLGS) as reported by administrators compared to those reported by other administrators in its set, the effect of each is significant.

The linkages among concepts in the theoretical propositions and causal model have been operationalized by specifying their form and direction. Any attempt to specify coefficients and limits for the relationships has been deferred due to a lack of theoretical rationale. The linear form of linkages is specified throughout the propositions. In view of the lack of theoretical rationale and the solutions available for analysis, it is considered most judicious to begin with a basic linear form and consider the possibility of curvilinearity or power forms later (Hage, 1972). However, it is recognized that relationships among all the variables in the model would appear to be moderately interrelated and to not

belong to the same class or element. When this is true, the linear form seems questionable and the curvilinear or power form more likely (Hage, 1972).

The block-recursive model

The general and empirical propositions have been presented which reflect the relationships that are postulated for the combined effects of all indicators of the independent variables as causes of each dependent variable indicator. However, the primary focus of this model building study is on the construction and evaluation of a model that links latent (complex) concepts in cause and effect relationships. For this purpose the analysis moves up a level of abstraction to examine the relative contribution of the complex concepts (blocks) that are posited as determinants on the separate indicators of complex concepts that are posited as results.

More specifically, the theoretical model asserts that comparative possession of resources (RESCRS-block of indicators BUDG and PBDG), comparative access to and constraint over resource flows (CONSTR-block of CENTA and CENTB) and comparative availability of alternatives of resources (AVAIL-block of FUNDS and CLNTG) each will significantly add to the explanation of an organization's capacity to coordinate its subunits (CAPCRD), compared to other organizations in its set after the other two independent concepts have explained all they can. Likewise the model posits that comparative possession of resources (RESCRS), access to and constraint over availability of alternatives (CONSTR) and capacity to coordinate resource

flows (CAPCRD) will each add significantly to the explanation of comparative obligations accumulated (OBLIGATS) and motivational investment (MOTIVATS), after the effects of the other three independent concepts have explained all they can. Finally, the model asserts that comparative possession of resources (RESCRS), access to and constraint over resource flows (CONSTR), availability of alternatives (AVAIL), motivational investment (MOTIVATS) and obligations accumulated (OBLIGATS) will each add significantly to the explanation of selection of a cooperative strategy (COOPER) and selection of a conflict strategy (CONFLICT) after the other five independent concepts have explained all they can.

Empirically we hypothesize that the blocks of indicators; comparative budget (BUDG) and perceived budget scarcity (PBDG), comparative director interactions sent and received (CENTA) and information sent and received (CENTB), and the number of funding sources (FUNDS) and number of client groups served (CLNTG) will each add significantly to explanation of both number of positions (COMPLX) and education of the administrator (EDADM) after the other two blocks have explained all they can. We further hypothesize that the blocks of indicators; comparative budget (BUDG) and perceived budget scarcity (PBDG), comparative director interactions sent and received (CENTA) and information sent and received (CENTB), number of funding resources (FUNDS) and number of client groups (CLNTG) and the number of positions (COMPLX) and education of administrator (EDADM) will each add significantly to the explanation of both importance of contacts (MOTIV) and the excess of resources provided over received (OBLGS) after the other three blocks have explained all they can.

Finally it is hypothesized empirically that the blocks of indicators; comparative budget (BUDG) and perceived scarcity of budget (PBDG), comparative director interactions sent and received (CENTA) and information sent and received (CENTB), comparative number of funding sources (FUNDS) and number of clients groups (CLNTG), comparative number of positions (COMPLX) and education of the administrator (EDADM), comparative importance of contacts (MOTIV) and comparative excess of resources provided over received (OBLGS) will each add significantly to the explanation of the number of total comparative joint programs (COOPA), the comparative total conflicting responsibilities (CNFLA) and the total comparative extent of disagreements (CONFLB) after the other five blocks have been allowed to explain all they can.

Statistical Procedures

The statistical procedures employed to test the propositions and causal model are linear regression and multiple-partial correlation analysis. The empirical statistical tests for these procedures are presented prior to a discussion of the analysis techniques.

Empirical statistical tests

The empirical statistical tests that are consistent with the general hypotheses (E.H.1.-5.) and the corresponding theoretical statistical hypotheses and empirical hypotheses presented earlier are:

$$H_0: R = 0$$

$$H_a: R \neq 0$$

The linking terms in all four types of hypotheses are consistent in that all posit that significant variance in a dependent variable is explained

by a group of independent variables with the effect of each variable significant.

The empirical statistical tests for propositions outlined in the block-recursive causal model are:

$$H_0: R^2_{y(i-k) \cdot u-x} = 0 \quad H_a: R^2_{y(i-k) \cdot u-x} \neq 0$$

The relationships posited in the theoretical model, empirical hypotheses and theoretical statistical hypotheses are consistent. The empirical statistical tests are appropriate since each is concerned with assessing the relative importance of specific complex determinants (blocks) for explaining remaining variance in concepts posited as results after the effects of other determinants have been included in the equation. The statistical test determines the amount (percent) of remaining variance explained in a dependent variable by an independent variable or blocks of independent variables (independent variables) after the variance explained by all other independent variables of interest has been accounted for. We turn now to a more detailed explanation of linear regression and the multiple partial correlation square procedures.

Linear regression

The multiple regression model is applied in this study. Multiple regression examines the collective and unique contributions of two or more variables to the explanation of a dependent variable (Kerlinger and Pedhazur, 1973). The basic equation of the multiple linear regression model is:

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_kX_k$$

Where Y equals predicted scores of the dependent variable, X equals scores of the independent variable(s), a equals the intercept constant, and b equals the regression coefficient. Y values are predicted from x values.

According to Blalock (1964:43): (1) estimating equations and (2) causal models are the two uses of regression models. In the first use statements are generated about unknown population values (parameters) based on pieces of information (statistics) contained in a sample. The second use assumes that hypothesized causal linkages can be approximated by linear regression equations. This usage allows hypothesized causal linkages between variables to be tested with the assumption that changes in X "produces" Y, rather than that Y follows a change in X or is associated with a change in X. According to Blalock (1964) the second usage has important implications for causal analyses. Although causality cannot be empirically verified, linear regression can generate substantive evidence to provide a basis for making causal inferences.

The criteria for evaluating linear regression models used in this study include: (1) the F-test for significance of the full regression equation, (2) the size and significance of the squared multiple correlation coefficient (R^2 - percent of explained variance in the dependent variable), and (3) the size and significance of the regression coefficients for each independent variable (Draper and Smith, 1966); Kerlinger and Pedhazur, 1973). The F-test compares a calculated F-value with a tabular F-value at a specific level of significance (i.e., .01, .05, .10, .25) to determine whether the regression of the dependent variable on the independent variables (or the amount of variance in the dependent variable

explained by the combined effects of the independent variables) is significant statistically. Information concerning the amount of variance in the dependent variable accounted for by the independent variable(s) is supplied by the squared multiple correlation coefficient (R^2). The amount of change in the dependent variable which is a function of a per unit change in each of the independent variables is indicated by the partial regression coefficients (b). A t-test (partial F-test where $t^2 = F$) with one degree of freedom is used to determine the statistical significance of a single partial regression coefficient when the influence of all other independent variables in the model is controlled.

Multiple-partial correlation

Multiple-partial correlation analysis is a key procedure for causal model building and analysis, specifically because multiple indicators of complex concepts can be employed. The indicators of a latent concept are grouped together in blocks, but allowed to operate independently within the blocks. Furthermore the number of separate tests required to assess the model's fit with data are greatly reduced from what is required when multiple indicators are analyzed on an indicator by indicator basis. The fact that only one indicator of a dependent variable can be analyzed at a time allows multiple analyses of each prediction. This allows an examination of whether the blocks affect the separate components of the dependent variable in the same or different ways (Sullivan, 1974:251). This is an asset when it is assumed that concepts are complex (multidimensional). In order to obtain valid results for model building and testing it may be

necessary to demonstrate that different dimensions are related in different ways to the blocks of independent variables. The researcher can assess the relative amount of variance remaining in a dependent variable, and accounted for by a set of independent variables, after other blocks of independent variables have explained all the variance they can. This is an important substantive advantage for providing crucial information for model building and testing particularly when highly complex, multidimensional concepts are involved.

Multiple-partial correlation is an extension of multiple correlation, but the multiple-partial focuses on partitioned explained variance. While the square of the multiple correlation coefficient (R^2) involves the proportion of variance in a dependent variable that is explained simultaneously by two or more independent variables, the square of the multiple-partial correlation coefficient pertains to the proportion of the remaining variance explained by a block of indicators after one or more predictors have explained as much variance as possible in the dependent variable. Thus, the square of the multiple-partial correlation focuses on the proportion of variance explained by a single indicator or block of indicators, as opposed to the square of the multiple correlation coefficient which represents the percent of explained variance by all independent variables at once (Blalock, 1972).

Suppose a researcher is interested in explaining organizational effectiveness (Y). Using Etzioni's (1975) model, he argues that organizational effectiveness can be explained by Scope (X_1), Pervasiveness (X_2), Job Satisfaction (X_3), Communication (X_4) and Socialization (X_5).

While all five variables are believed to each explain significant variance in effectiveness, taken together, the researcher is interested in the effects of job satisfaction, communication and socialization after scope and pervasiveness have explained all the variance in effectiveness that they can. Thus the researcher's primary interest would be in how much of the remaining variance in Y is explained by the block of variables; X_3 , X_4 , and X_5 . The researcher has created two blocks of the independent variables, $X_1 - X_2$ and $X_3 - X_5$, for this purpose.⁵

Statistically, $R^2_{Y \cdot X_1 X_2 X_3 X_4 X_5}$ represents the square of the multiple correlation coefficient or the proportion of variance in the dependent variable (Y) explained by all the independent variables ($X_1 - X_5$). In order to determine the proportion of variance explained by the group or block of variables, $X_3 - X_5$, the proportion of variance explained by the block of variables that are controlled must be first subtracted from the multiple correlation coefficient. This procedure is represented in the following equation:

$$R^2_{Y \cdot X_1 X_2 X_3 X_4 X_5} - R^2_{Y \cdot X_1 X_2}$$

The percent (%) of variance explained by $X_3 - X_5$ is the percent (%) of the total variance remaining in Y that is explained by $X_3 - X_5$. In other words it is the percent (%) explained by $X_3 - X_5$ after the block of

⁵Several Iowa state studies have used Etzioni's (1975) model to explain organizational effectiveness. The example used here is used only to illustrate the multiple-partial correlation square. There is no intent to represent or misrepresent the questions explored in these studies or in Etzioni's model.

variables, $X_1 - X_2$, has been allowed to explain all it can. Thus the remainder of variance explained by $X_3 - X_5$ ($R^2_{Y \cdot x_1 x_2 x_3 x_4 x_5} - R^2_{Y \cdot x_1 x_2}$) must be divided by the proportion of variance explained by the block, $X_1 - X_2$, subtracted from unity. The equation for the remaining variance in effectiveness (Y) explained by job satisfaction (X_3) communication and (X_4) socialization (X_5), as a block, after scope (X_1) and pervasiveness (X_2), as a block, has been allowed to explain all the variance it can, is as follows:

$$R^2_{Y (X_3 X_4 X_5)} \cdot X_1 X_2 = \frac{R^2_{Y \cdot X_1 X_2 X_3 X_4 X_5} - R^2_{Y \cdot X_1 X_2}}{1 - R^2_{Y \cdot X_1 X_2}}$$

The multiple-partial correlation coefficient and its square will be derived using the SPSS computer regression program. A hierarchical inclusion format will regress the dependent variable on each block of independent variables after the control block had already been entered in the regression equation. The multiple-partial correlation square is the coefficient that will be used to assess the paths in the causal model. If the F-test for improvement in remaining explained variance is statistically significant we have support for the assertion that the complex concept of interest has significant causal effects on the dependent variable concept.⁶ Although the multiple-partial correlation coefficient square cannot be interpreted as a path analysis coefficient, it can be used in an analogous

⁶The formula for the F-test is:

$$F = \frac{R^2_{i \cdot jk \dots w} - R^2_{i \cdot tu \dots w/k_1 - k_2}}{1 - R^2_{i \cdot tu \dots w/N - k_2 - 1}}$$

Where N = the sample size and k = the number of independent variables in the equation.

manner as an estimate for determining paths that should remain in or be removed from a causal model (Sullivan, 1971). In the model building framework for this study it is critical to assess the relative contributions of latent (complex) concepts, represented by blocks of multiple indicators, to dependent variables. The multiple-partial correlation coefficient square estimates the relative importance of a block of indicators representing a complex concept as a cause of a dependent variable, after the effects all other variables have been assessed. This is an important alternative procedure for work in the construction of theories involving highly abstract constructs as proposed in the present study.

Statistical assumptions

The assumptions for use of linear regression and multiple-partial correlation procedures to test the hypotheses and assess the causal model are delineated in this section. The rationale for the extent each assumption is met in this study or the conditions for relaxing a specific assumption will be discussed as each is presented.

A.1. The sample must be randomly selected. The units for this study comprise the total population of natural resource agencies in five (5) Northeast Iowa counties. The data set is used to assess the fit between the theory and data in a theory building context. The study is not considered a test of the theory and no inferences will be made beyond the units from which data were drawn.

A.2. The Y (dependent variables) are normally distributed at each value of X's (independent variables). This assumption can be relaxed if the sample size is large or if units analyzed are macro level units of emergence from patterned relations among individuals. While the sample size is not large ($N = 39$) the units studied are the relations among organizations as actors. Also considering that this is a theory building and evaluation exercise, as opposed to a theory testing study, it seems reasonable to relax this assumption.

A.3. The relationship among the variables should be linear. Direct examination of the residuals provides evidence as to the degree this assumption is met. Examination of the residual scatterplots (i.e., where residuals were plotted against Y values for cooperation and conflict) for each of the final dependent variables in this research revealed that this assumption was not seriously violated.

A.4. Residuals (errors) should be random and normally distributed with equal variances at each value of X. Direct examination of residual scatterplots also provides evidence as to whether this assumption was met. The residual plots for the final dependent variables (cooperation and conflict) indicate that this assumption was not severely violated.

A.5. All variables are measured on at least an interval scale. All variables in this research were measured as continuous data or on Likert-type scales which correspond to interval level measurement.

A.6. All relevant variables can be theoretically identified and included in the model. Based on existing theory of social power and organizational power and past research in the areas of community power, intra-organizational power and interorganizational power, it is concluded that the relevant variables have been identified and were included in the model.

A.7. There should be a one-way causal flow in the system (i.e., asymmetrical causal relationships). Since only asymmetrical causal relationships are posited in the model, this assumption was met.

CHAPTER V. FINDINGS

The objective of this chapter is to evaluate the extent to which the theory of interorganizational power process, that has been built, is supported by data collected in a specific concrete setting. The identification and development of indicators for complex concepts subsumed by the process of interorganizational power will be evaluated on the basis of these data. And the hypothesized causal relationships among the latent concepts, which are viewed as central to the power process will be empirically evaluated. The findings will be presented in three sections. First, the empirical results regarding the adequacy of indicators as measures of the latent concepts are presented and discussed. Second, the regression equations included in the causal model are evaluated. The multiple-partial correlation analysis of assumed causal relations among the complex (latent) concepts in the model is presented in the third section.

The criteria used to empirically evaluate the hypothesized causal relations include the: (1) collective contribution of the independent variables to the explanation of the dependent variable as indicated by squared multiple correlation coefficients (R^2), and (2) magnitude and significance of the regression coefficient for each independent variable indicator. The F-test is applied in testing for the overall regression of each dependent variable on the independent variables. The t-test is used in testing for the significance of the individual regression

coefficients. The .25 level of significance is used as the minimum level for the decision of whether or not a hypothesis received empirical support based on the F-test. The .25 level of significance is also the minimum used to decide if, on the basis of the t-test, a single independent variable has contributed significantly to a dependent variable. The .25 level of significance is considered an appropriate criterion for these decisions when the objective is the building of a model. Significance levels of .10, .05 and .01 are more appropriate for the testing of models that have been more fully specified and evaluated (Bancroft, 1968). In the early phases of model development and evaluation, important concepts and indicators may be eliminated from the model before they have been adequately assessed or refined. In the model building framework, particularly when complex concepts are involved the emphasis is more legitimately on a theoretical rationale for decisions to include or exclude concepts and indicators. Empirical assessment focuses on evidence provided to consider the adequacy of auxiliary theory and to search for ways to improve the measurement of the complex concepts. For this reason, significance levels up to .25 will also be noted when it seems reasonable to retain consideration of the hypothesis, given the theoretical argument is convincing.

Indicators of the Latent Concepts Subsumed by the Process of Power

Descriptive statistics and correlations among indicators of the latent concepts subsumed by the process of power are used to evaluate the quality and validity of the indicators. Warren, et al. (1977) report

that the interrelationships of descriptive statistics are useful for evaluating the quality of measures of concepts. These statistics are also reported for comparison with other studies as theory building efforts continue. The mean, median, mode, variance, standard deviation, range, kurtosis and skewness will be examined for each indicator of a concept. The reader is again reminded that all measures are constructed to indicate comparative variable properties of organizational relations.

The mean or average of scores, is examined in relation to other descriptive measures. It allows comparison across studies while the total does not and it is useful for comparison to a known criterion. The mean along with the median and mode are important for examining the assumption of normality. If the distribution is normal, the mean, median and mode will be the same. The median (middle score) is not influenced by extreme values and therefore serves as a criterion for whether the mean has been unduly distorted by extreme values. The mode (most frequent score) is also useful for indicating the distortion of the mean by extreme values. However, the mode has a further substantive value. Bimodal distribution may indicate that more than one sphere of meaning of a concept is being tapped by an indicator.

The variance (average of squared deviations from the mean) describes the extent scores of an indicator are dispersed or spread about the mean. The variance is an important statistic to examine to determine if an indicator demonstrates differences among units of the study. If all have the same score on an indicator, there will be no differences to explain. The standard deviation (square root of the variance) is also

a measure of the dispersion of scores about the mean, but is expressed in the original units of measurement. The range is the difference between the maximum and minimum scores and is also a measure of dispersion.

There is a possible range and an actual range. If the actual range of scores on an indicator do not represent the possible range, the validity of the indicator might be questioned in terms of how well it samples the entire scope of meaning of a concept.

Kurtosis is a measure of the peakedness of a distribution of scores on an indicator and is used in conjunction with the variance to evaluate indicators. If it is too peaked it may mean the indicator is vague. If it is too flat it may mean that the indicator is ambiguous. Information regarding the kurtosis of a measure (i.e., clustering) may suggest that response choices do not adequately discriminate among the units studied. Skewness reflects extreme scores in a distribution and is useful in considering whether units included in a study are truly part of the population of interest. Skewness is also used in conjunction with the mean to evaluate the normality of a distribution.

The correlations among indicators of the same concepts and among indicators of different concepts in the model are also examined. The intercorrelations will be discussed in terms of specific theoretical assumptions that have been made regarding measurement of the latent concepts of the power process.

The descriptive statistics for each indicator are presented in Table 5.1. The reader can refer to Figure 5.1 for a diagram of the latent concepts and the indicators selected as their measures.

Table 5.1

Descriptive statistics for indicators of concepts subsumed by the process of organizational power (evaluation of quality of indicators).

Concept	Indicator	Mean	Median	Mode	Actual Range	Variance	Standard Deviation	Kurtosis	Skewness
RESCRS	BUDG	0.689	0.609	0.218	0 - 2.899	0.405	0.637	5.789	2.356
	PBDG	3.689	4.197	3.110	0 - 7.440	3.210	1.792	-0.013	-0.324
CONSTR	CENTA	471	451	456	0-985	38208	196	0.781	0.460
	CENTB	256	231	235	0-575	19697	140	-0.076	0.518
AVAIL	FUNDS	1.044	1.107	0.220	0 - 3.440	0.871	0.933	-0.093	0.841
	CLNTGS	4.116	4.802	5.530	0 - 7.090	4.634	2.153	-1.015	-0.562
CAPCRD	COMPLX	3.803	4.133	4.450	0 - 8.890	3.576	1.891	0.552	0.162
	EDADM	1.967	1.826	1.780	0 - 4.600	1.255	1.120	-0.376	0.182
OBLIGATS	OBLGS	86.141	87.508	87.500	0-144.830	476.079	21.819	8.043	-1.404
MOTIVATS	MOTIV	2.817	2.905	2.800	0 - 5.600	0.082	0.991	2.909	-0.480
COOPER	COOPA	5.659	5.300	3.100	0 - 24.600	21.680	4.657	5.974	1.846
CONFLICT	CONFLA	1.307	1.216	1.000	0 - 3.000	0.508	0.713	-0.062	0.433
	CONFLB	6.824	6.892	6.890	0 - 8.220	1.444	1.222	26.845	-4.712

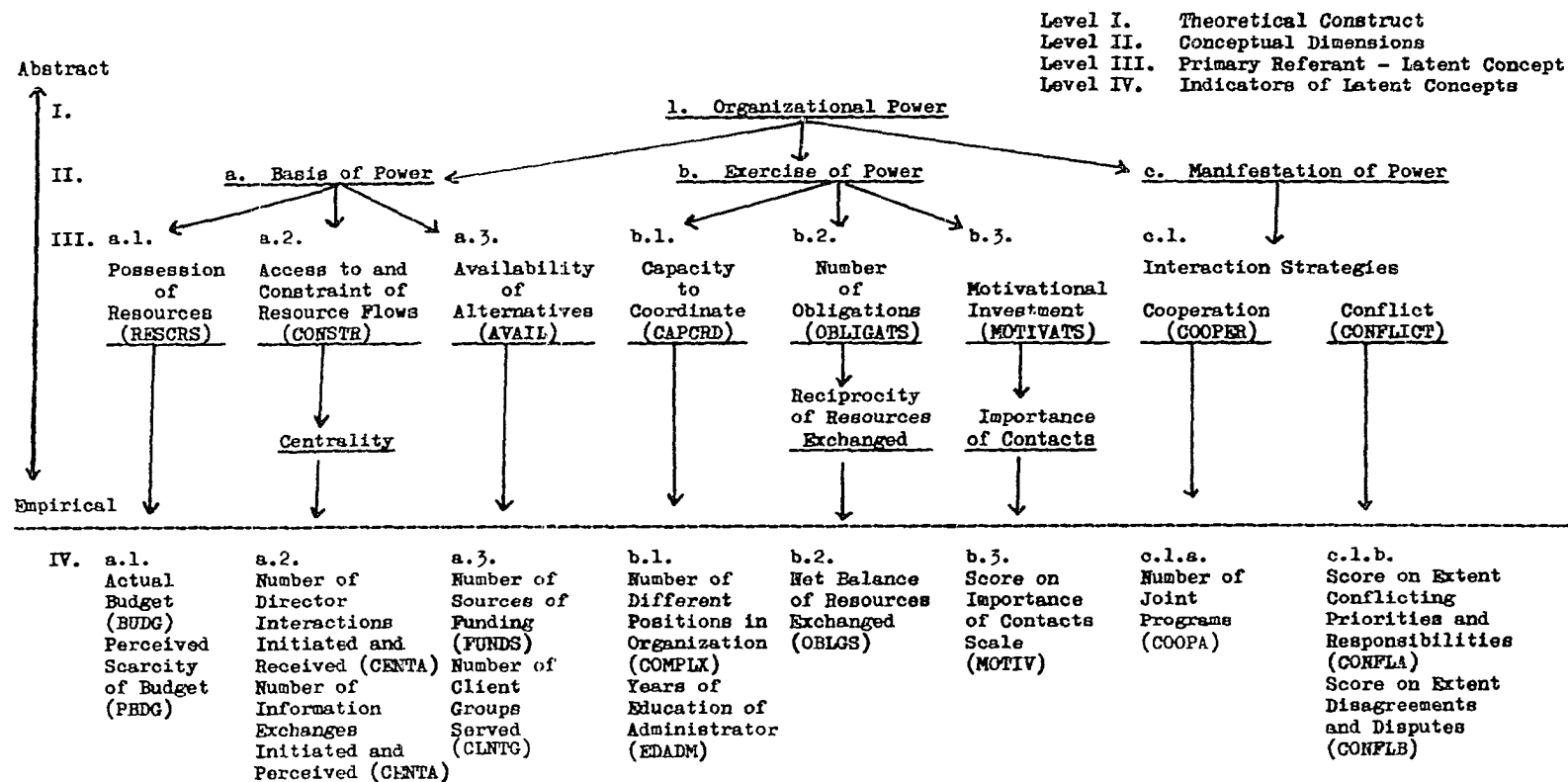


Figure 5.1

Diagram of dimensions of organizational power, latent concepts and indicators.

The zero order correlations among indicators of the latent concepts are reported in Table 5.2.

Resources possessed

Actual budget (BUDG) and perceived budget scarcity (PBDG) are the indicators of comparative resources possessed (RESCRS).¹ Examination of the descriptive statistics for actual budget (BUDG) reveals that the mean (0.689) and median (0.609) are fairly equal while the mode (0.218) is a much smaller score. The actual range (0-2.899)², variance (0.405) and standard deviation (0.637) indicate that scores are quite well-dispersed about the mean. However, the distribution is skewed somewhat to the right (skewness = 2.356) suggesting some extreme values. The kurtosis measure (5.789) indicates a clustering of scores about the mean, yet direct examination of the frequency distribution revealed general dispersion of scores.

¹The reader should consult Table 4.1 in Chapter IV to see the notation used for the concepts and indicators. The reader is also again reminded that all concepts are conceived as comparative variable characteristics of the relations among organizations. Likewise all indicators are constructed as comparative variables.

²Since the scores of all indicators are calculated as total comparative values, the possible range of values are constrained by the original raw scores for each organization. Furthermore, some indicators, such as actual budget, have a possible range of 0 to infinity. For these reasons the comparison of actual and possible ranges for the indicators are not considered useful.

Table 5.2

Correlations among indicators of latent concepts
subsumed by the process of organizational power.

Resources Possessed		Resource Access Constraint		Number of Alternatives		Capacity to Coordinate	
(RESCRS)		(CONSTR)		(AVAIL)		(CAPCRD)	
BUDG	PBUDG	CENTA	CENTB	FUNCS	CLNTG	COMPLX	EDADM
BUDG	.19*	-.17	-.11	.45*	.20*	.75*	.09
PBUDG		-.06	-.14	.17	.12	.09	-.00
CENTA			.69*	-.04	-.10	-.14	-.28*
CENTB				-.11	-.11	-.02	-.31*
FUNDS					.23*	.52*	.25*
CLNTG						.20*	.38*
COMPLX							.37*
EDADM							
MOTIV							
OBLGS							
COOPA							
CONFLA							
CONFLB							

*Significant @ p = .10 or beyond.

Table 5.2 (continued)

Motivational Investment	Number of Obligations	Cooperation Strategy	Conflict Strategy	
(MOTIVATS)	(OBLIGATS)	(COOPER)	(CONFLICT)	
MOTIV	OBLGS	COOPA	CONFLA	CONFLB
-.01	.03	.04	.06	-.05.
-.17	.05	.19	.12	-.07
.13	-.07	.01	-.08	.18
.20*	.14	.19*	-.18	.28*
.18	.02	.11	-.12	-.35*
.19*	.05	.18	.00	-.12
.10	.02	.42*	.09	.04
-.14	.14	.29*	.08	-.13
	.02	-.03	-.27*	.29*
		.00	.01	-.03
			.11	.09
				.25*

The agencies with the extreme values in operating budgets were determined to be the County Engineer Agencies in the three counties. Since the activities of these agencies are considered salient to the use of natural resources, they are also considered members of the population of natural resource agencies. The realities of relative possession of budget resources among members of a set of natural resource agencies are reflected in the distribution of the scores. Measurement of relative operating budget as a possessed resource might include the ratio of budget appropriated to an estimate of dollars needed to meet agency goals. A measure determined in this manner might better reflect possession of budget as a valued resource and potentially eliminate the extreme values.

Perceived budget scarcity (PBDG) as an indicator of possession of resources (RESCRS) has a mean (3.689), mode (3.110) and median (4.197) that are fairly close to one another, although not equal. The range (0-7.44), variance (3.210) and standard deviation (1.792) show scores well dispersed about the mean. Kurtosis (-0.013) indicates that scores are not clustered in a narrow range and the skewness statistic (-0.324) suggests that the mean is not distorted by extreme values. The statistics, taken together, provide some reassurance that the indicator scores are fairly normally distributed and that, comparative perceived scarcity of budget, as an indicator of resources possessed has some quality.

It is assumed that comparative actual budget (BUDG) and comparative perceived scarcity of budget (PBDG) do not measure the entire scope of meaning of resources possessed. It is also assumed that the two indicators are not tapping the same dimension of resource possession. We expect, therefore, that if the two indicators are valid measures of resources

possessed, they will be low to moderately correlated and not necessarily correlated in the same way with indicators of other concepts in the model. We find this to be the case. The correlations presented in Table 5.2 reveal that the correlation of BUDG and PBDG is .19. This is interpreted as, the greater the comparative actual budget reported by administrators, the smaller the comparative perceived scarcity of budget that is reported. Actual budget (BUDG) is related significantly to both indicators of the number of alternative sources of resources (AVAIL); FUNDS = .45, CLNTG = .20 and to one indicator of the capacity to coordinate (CAPCRD); COMPLX = .75. The lack of significant relationships with measures of centrality may reflect the deviant organizations mentioned above that are indicated in the sample. Perceived scarcity of budget (PBDG) is not related significantly to any of the other concept indicators. In general, the inspection of the correlations indicate heterogeneity of relationships with indicators of other concepts in the model. This is so in regard to magnitude and direction of the relationships. Although the theory anticipates correlations of greater magnitude between these indicators and indicators of the focal dependent variables, cooperative strategy (COOPER) and conflict strategy (CONFLICT), the findings tend to increase our confidence in the validity of the measures.³ The findings also suggest that more indicators of the concept should be identified to adequately measure the entire

³We are quite confident of the reliability of the actual budget indicator since it is the report of objective organization data by administrators. However, no estimate of the reliability of the perceived scarcity of budget measure is available.

domain of meaning and to assess the reliability and validity of measurement.

Access to and constraint over resource flows

The measures for access to and constraint over resource flows (CONSTR) are director interactions sent and received (CENTA) and information sent and received (CENTB). The mean, median and mode for CENTA are 471, 451 and 456 respectively. The actual range is 0-985. The variance is 38201 and the standard deviation is 196. Kurtosis and skewness are 0.781 and 0.460.

The mean for CENTB is 256, while the median is 231 and the mode is 235. The variance of CENTB is 19697, the standard deviation is 140 and the actual scores range from 0 to 575. Kurtosis is -0.076 while skewness is 0.518.

Based on the descriptive statistics, the two indicators appear to have quality as indicators of access to and constraint over resource flows. The measures of central tendency and the skewness statistic for each indicator are close to the same value indicating that the scores are distributed normally. The statistics for each measure provide evidence of adequate dispersion of scores about the mean, while the kurtosis measure indicates minimal clustering of scores.

The correlation of CENTA and CENTB is .69 (Table 5.2). This finding is consistent with the assumption that the two indicators of access to and constraint over resource flows will be highly and positively correlated. It was assumed that the two measures would tap the same dimension of the latent concept.

The indicators are related in a homogenous manner with indicators of other concepts in the model in terms of direction except for OBLGS, the indicator of number of obligations accumulated in relations. There is less consistency of correlations with indicators of other concepts regarding magnitude. CENTA is significantly correlated - .28 with EDADM, while CENTB is correlated - .31 with EDADM, .20 with MOTIV and .28 with CONFLB at a significant level.

The negative correlations of CENTA and CENTB with EDADM are not in the posited direction. We expected centrality to be related positively to an organization's ability to coordinate subunits. While this may be the case when other dimensions of centrality and capacity to coordinate are considered, organizations in central positions of interaction and information exchange in a network may have less need to maximize integration of internal subunits for power exercise.

The positive correlation of CENTB and MOTIV is also not as hypothesized. The theory asserts that greater centrality will produce fewer motives invested in relations with others. Again additional indicators are needed. Greater numbers of exchanges of information may produce sentiments which elevate the importance of contacts, whereas this would not be so with other dimensions of motives invested in relations. Measures should be developed that separate the affective sentiments regarding contacts from importance that is associated with necessity and lack of substitutability. While the validity of the measures continues to be questionable, when the assumptions in the theory are noted, we have some evidence for their validity. When only a few indicators of highly complex

concepts are available, lack of homogeneity of correlations across concepts can be taken as support for the validity of the few measures in the sense that they are tapping separate dimensions of the latent complex concept involved.

Availability of alternative sources of resources

The number of funding sources (FUNDS) and the number of client groups served (CLNTG) are the indicators of the availability of alternative sources of resources (AVAIL). Inspection of the descriptive statistics reveals that the means (FUNDS = 1.044; CLNTG = 4.116), medians (FUNDS = 1.197; CLNTG = 4.802) and modes (FUNDS = 1.220; CLNTG = 5.530) are fairly equal for each indicator. This suggests that the distributions of scores for each measure do not depart markedly from normality. The measures of dispersion also indicate a spread of scores about the mean for each indicator. And the kurtosis and skewness measures for each score do not suggest undue clustering of scores about the mean or distortion of the mean by extreme values. These statistics are evidences of the quality of the two indicators.

The two indicators of the availability of alternative sources of resources are viewed as tapping separate dimensions of the latent variable. Thus the two indicators are not expected to be highly correlated. As expected the zero-order correlation of FUNDS and CLNTG is .23. This finding supports the notion that the indicators are tapping two different dimensions of the complex concept. Likewise, the indicators are not consistently related to indicators of other concepts in the model. In terms of

direction the relationships are consistent except for the correlation of FUNDS and CONFLA. The direction of the relationships are in the posited direction except for those with CONFA, MOTIV and OBLGS. The relationships of FUNDS with COMPLX ($r = .52$), EDADM ($r = .25$) and CONFLB ($r = -.35$) are statistically significant as is that of CLNTG with EDADM ($r = .38$). Although no statistical estimates of the reliability of the two indicators are available the knowledge that both involve reports of objective, factual information by administrators provides some evidence for their reliability.

The capacity to coordinate subunits

Two separate measures for the capacity to coordinate subunits (CAPCRD) were developed. These are complexity, the number of unique positions (COMPLX) and education of the administrator (EDADM). The mean (3.803), median (4.133) and mode (4.450) for COMPLX are fairly homogenous and indicate that the distribution of the scores does not deviate to any great degree from normality. Measures of dispersion (range = 0 - 8.89, variance = 3.576 and standard deviation = 1.891) reveal adequate dispersion of scores. Kurtosis (0.552) and skewness (0.162) are evidence of limited clustering of scores and minimal distortion of the mean by outliers.

Similarly, the descriptive statistics for EDADM support that it is a useful indicator. The mean (1.967), median (1.826) and mode (1.780) are quite consistent. The range (0 - 4.6), variance (1.255) and standard deviation (1.12) reveal dispersion. Kurtosis (-0.376) and skewness (.182)

values indicate minimal clustering and distorting of the mean by extreme outlying scores.

The two measures of capacity to coordinate reflect different aspects of the scope of its meaning. Therefore, the moderate magnitude of the zero-order correlation (.37) for the two indicators is considered support for its validity. Also, the inconsistent relationships of the two indicators with indicators of other concepts in the model are as expected. However, as noted earlier, the negative correlations with indicators of availability of alternative sources (AVAIL) is not as posited. As hypothesized both COMPLX and EDADM are positively and significantly related to COOPA. The two indicators of capacity to coordinate are considered reliable because they both are reports of objective information by administrators about their respective organizations.

Motivational investment

A single indicator of motivational investment (MOTIVATS) was available for the empirical analysis. The indicator is important of contacts (MOTIV). The mean (2.817), median (2.905) and mode (2.800) are nearly equal. This finding is evidence that scores are normally distributed about the mean and not distorted by extreme values. The ranges (-5.6) variance (0.982) and standard deviation (0.991) indicate adequate scattering of scores across the range of values. The kurtosis statistic (2.909) indicates some clustering of scores in a narrow range about the mean. Direct examination of the frequencies, however, showed that this was not extreme. The scores are minimally skewed (-0.480). Taken as a whole,

the descriptive statistics support the quality of the indicator.

As noted earlier, MOTIV is correlated positively and significantly with CENTB, a result that is contrary to the hypothesized relationship. MOTIV is correlated as hypothesized with CONFLA (-.27) and not as hypothesized with CONFLB (.29) although both relationships are statistically significant. This finding is further support for the conceptualization and measurement of the latent concepts of power as multidimensional. To the extent that the measure of motivational investment reflects sentiments generated by a relationship, we might expect less indirect conflict or conflicting priorities and responsibilities (CONFLA) and more direct conflict or disagreements and disputes (CONFB). Overall, the correlations of MOTIV with indicators of other concepts in the model are not homogenous.

Number of obligations accumulated

OBLGS is the single indicator used to measure number of obligations accumulated (OBLIGATS). The quality of this indicator is suspect according to information provided by the descriptive statistics. The mean (86.14), the median (87.51), the mode (87.50) and skewness (-1.404) are consistent with scores that are not badly distorted by outliers. And the range (0-144.83), variance (476.08) and standard deviation (21.82) reflect reasonable dispersion of scores about the mean. However, the kurtosis (8.043) as well as direct observation of the frequencies, indicates that there is considerable piling of scores in a narrow range about the mean.

OBLGS is not significantly correlated with any of the indicators of other concepts in the model. Although we must also question the

theoretical relationships that are hypothesized, we are inclined to question the adequacy of this measure. There is considerable theoretical support of the role of obligations in the power process as a critical element in the exercise of power to elicit compliance. Therefore, it seems likely that the indicator of obligations lacks quality. However, because additional indicators of other complex concepts in the model are also needed which might be related to the dimension of obligations reflected in OBLGS, it is considered prudent to not totally reject it as a potential indicator.

Cooperative strategies

A single indicator, number of joint programs (COOPA), of cooperative strategies (COOPER) is also available for the empirical analysis. Thus only the coalescing dimensions of cooperative strategies is tapped. While the mean (5.659) and median (5.300) are nearly equal, the mode (3.100) is a smaller value. This suggests that the distribution departs somewhat from normality, although the measure of skewness (1.846) is not too large. Measures of dispersion (range = 0 - 24.6, variance = 21.689 and standard deviation = 4.657) indicate an acceptable scattering of scores about the mean. Kurtosis (5.974) is of concern, although an inspection of the frequencies do not show marked clustering of values in a narrow range about the mean. Although the quality of this indicator could be improved, it is considered acceptable on the basis of these statistics. Use of data from a sample of organizations larger than $N = 39$ might also correct some of the problems of quality.

Zero-order correlations of COOPA with indicators across concepts in the model are fairly consistent, but of low magnitude, nonsignificant except for the relationships with indicators of capacity to coordinate (COMPLX = .42 and EDADM = .29). Indicators of the several dimensions of cooperative strategies (i.e., contracting, coopting) need to be developed to flesh out the full potential to explain cooperative strategies. As with other indicators that involve reports of objective and factual information about organizations by administrators, the reports of the number of joint programs is considered a reliable measure of the coalescing dimension of cooperative strategies.

Conflict strategies

Conflict strategies (CONFLICT) are measured by two indicators. The extent of conflicting priorities and responsibilities (CONFLA) measures a dimension of conflict that is latent or indirect. The extent of disagreements and disputes (CONFLB) measures a dimension of conflict that is active and direct. CONFLA appears to have considerable quality, based on the descriptive statistics. The mean (1.307), median (1.216) and mode (1.000) are fairly equal. The range (0 - 3.000), the variance (0.508) and the standard deviation (0.713) reflect dispersion of scores about the mean, while kurtosis (-0.062) and skewness (0.433) show that there is minimal stacking of values close to the mean and that the distribution is not greatly skewed by extreme values.

The three measures of central tendency for CONFLB are also nearly the same (mean = 6.824, median = 6.892 and mode = 6.890). The variance

is 1.494, the standard deviation is 1.222 and the actual range is 0 - 8.220. However, the distribution is negatively skewed (-4.712) indicating marked distortion of the mean by an outlier. Inspection of the frequencies verifies that there is one extremely low value with one frequency. Kurtosis (26.845) is also extreme. Inspection of the frequencies again supports the statistic. Scores tend to be clustered in a fairly tight range around the mean. Although these findings tend to raise questions about the quality of the indicator (CONFLB), the measure reflects the real composite position of organizations relative to each of the organizations in their respective networks.⁴

As noted earlier the finding that CONFLA and CONFLB are related in different ways to indicators of other concepts in the model is viewed as support for the validity of the measures as indicators for separate and unique dimensions of conflicting strategies.

In summary, the majority of indicators seem to have quality as measures of the latent concepts. Those for which problems have been noted will be considered suspect in the subsequent empirical analysis. In Chapter VI methodological and substantive implications of measurement of the latent concepts will be discussed.

Now that the empirical findings regarding the adequacy of indicators of the latent concepts have been presented and discussed, we turn to an

⁴ Examination of the frequencies of raws scores on this variable prior to construction of the total comparative scores shows that scores are distributed in a fashion approximating normality with minimal skewness and kurtosis.

evaluation of the regression equations for each proposition in the causal model.

The Model of Interorganizational Power

The first general hypothesis (G.H.) in the model of interorganizational power states:

G.H.1. An organization's total capacity to coordinate its subunits (CAPCRD) relative to the capacity of other organizations in its set is a positive linear function of the combined effects of amount and type of resources possessed (RESCRS), the degree of access to and constraint it has over the flows of valued resources to and from other organizations (CONSTR) and the number of alternative sources of valued resources it has available (AVAIL) compared to other organizations in its set, the effect of each is significant.

Because there are two indicators of capacity to coordinate subunits; two hypotheses, one for each dependent variable indicator, are stated empirically:

E.H.1.a. The total number of different positions (CMPLX) reported by an administrator compared to the total number reported by each other administrator in a county is a positive linear function of the combined effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG), the number of times interactions that are sent and received by

administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of sources of funding (FUNDS) and the number of client groups served (CLNTG) reported by an administrator compared to those reported by administrators of other organizations in the county, the effect of each is significant.

E.H.1.b. The total education of an administrator (EDADM) reported by an administrator compared to the total education reported by each other administrator in a county is a positive linear function of the combined effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG), the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of sources of funding (FUNDS) and the number of client groups served (CLNTG) reported by an administrator compared to those reported by administrators of other organizations in the county, the effect of each is significant.

Each independent variable coefficient is posited to be positive in the theoretical model. The data from regression analysis for evaluating the general hypothesis (G.H.1.) via the two empirical hypotheses (E.H.1.a. and E.H.1.b.) are presented in Table 5.3.

The F-test (at the .01 level of significance) indicates that complexity or the number of positions (COMPLX) is a function of the independent variables in empirical hypothesis 1.a. However, all coefficients

Table 5.3 Unstandardized and standardized partial regression coefficients, t-values, R^2 and F-value for causes of capacity to coordinate subunits (CAPCRD) as power exercise (evaluation of hypotheses 1).

Resources Possessed	Dependent Variables	b	B	t-values
Resources Possessed (RESCRS)	COMPLX-Number of Positions			
BUDG-Actual Budget		1.896	0.638	5.09***
PBDG-Perceived Budget Scarcity		0.622	0.059	0.53
Access and Constraint over Resources (CONSTR)				
CENTA-Director Interaction		-0.121	-0.125	0.81
CENTB-Information		0.210	0.156	1.01
Availability of Alternatives (AVAIL)				
FUNDS-Number of Fund Sources		0.510	0.252	2.02*
CLNTG-Number of Client Groups		0.218	0.025	0.22
$R^2 = .62$		F-value = 8.86 ^a		
Resources Possessed (RESCRS)	EDADM-Education of Administrator			
BUDG		-0.162	-0.092	0.53
PBDG		0.586	-0.094	0.60
Access and Constraint over Resources (CONSTR)				
CENTA		-0.758	-0.132	0.62
CENTB		-0.147	-0.185	0.86
Availability of Alternatives (AVAIL)				
FUNDS		0.244	0.203	1.17
CLNTG		0.172	0.331	2.09**
$R^2 = .26$		F-value = 1.917 ^b		

^aAn F-value of 3.42 is significant at the .01 level.

^bAn F-value of 1.82 is significant at the .10 level.

*A t-value of 1.697 is significant at the .10 level.

**A t-value of 2.04 is significant at the .05 level.

***A t-value of 2.75 is significant at the .01 level.

are not positive as postulated in the theoretical hypothesis.⁵ The coefficient for the centrality of organizations as measured by director interactions sent and received (CENTA) has a negative sign. Taken together, the independent variables explain 62 percent ($R^2 = 62$) of the variance in complexity. This is a relatively high proportion of the variance explained in capacity to coordinate as measured by complexity (COMPLX) and it is significant at the .01 level.

Two of the independent variables contributes significantly to the prediction of comparative complexity. Actual budget is significant at the .01 level while number of funding sources is significant at the .10 level. Actual budget is the most important predictor of complexity after controlling for the effects of the other independent variables in the equation.

When the education of the administrator (EDADM) is the indicator for capacity to coordinate subunits, 26 percent ($R^2 = 26$) of its variance is jointly explained by the independent variables in the hypothesis. The F-test (at the .10 level of significance) indicates that education of the administrator is a function of the independent variables in the hypothesis. Only three coefficients are positive, as hypothesized; perceived budget scarcity (PBDG), the number of funding sources (FUNDS) and the number of client groups served (CLNTG). The number of client groups, alone, contributes significantly to the explanation of education of the

⁵The scoring for perceived budget scarcity was reversed so that high-scarcity = low score.

administrator (at the .05 level) after the effects of the other independent variables are controlled.

On the basis of these findings it can be concluded that the hypothesis is moderately supported. Strong support for the hypothesis would require that all variables have a significant effect on the dependent variable indicators. It can also be concluded on the basis of these findings that the two dependent variable indicators are a function of different independent variable indicators. This tends to support the contention that a multiple indicator approach to measurement of the complex concepts included in the power process is needed for construction and testing of a theory of interorganizational power.

The second general hypothesis (G.H.) of the power process is:

G.H.2. The relative number of total obligations incurred by an organization in its transactions with other organizations in its set (OBLIGATS) is a negative linear function of the combined effects of the relative total amount and type of valued resources it possesses (RESCRS), the degree of access and constraint it has over the flows of valued resources to and from other organizations (CONSTR), the number of alternative sources of valued resources it has available (AVAIL), and the extent of its capacity to coordinate subunits (CAPCRD) compared to other organizations in its set, the effect of each is significant.

Stated empirically, the hypothesis is:

E.H.2. The total number of times resources were received by an organization from other organizations minus the number of times resources were provided by an organization to others as reported by administrators (OBLGS) is a negative linear function of the combined effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG); the number of times interactions were sent and received by administrators (CENTA), the number of times information was sent and received by administrators (CENTB); the number of sources of funding (FUNDS), the number of client groups served (CLNTG); the total number of different positions reported by an administrator (COMPLX) and the total education of the administrator (EDADM); compared to those reported by administrators of other organizations in the county, the effect of each is significant.

The data for evaluation of this hypothesis are presented in Table 5.4

The overall F-test indicates that obligations incurred, measured by the net of exchanged resources received, is not a joint function of the independent variables as hypothesized. The collective contribution of the independent variables to the explanation of the variance in obligations was only four percent ($R^2 = .04$), the F-test for the multiple correlation coefficient square (R^2) failed to meet the .25 level used for declaring statistical significance.

Likewise no single independent variable contributed significantly to the prediction of obligations incurred by organizations in their

Table 5.4

Unstandardized and standardized partial regression coefficients, t-values, R^2 and F-value for causes of obligations incurred (OBLIGATS) as power exercise (evaluation of hypothesis 2).

Independent Variables	Dependent Variable	b	B	t-values
Resources Possessed (RESCRS)				
	OBLIGS-Net of Exchanged Resources Received			
BUDG		3.050	0.089	0.29
PBDG		-0.433	-0.036	0.19
Access and Constraint over Resources (CONSTR)				
CENTA		0.707	0.063	0.25
CENTB		-0.188	-0.121	0.45
Availability of Alternatives (AVAIL)				
FUNDS		-0.704	-0.030	0.14
CLNTG		-0.199	-0.020	0.10
Capacity to Coordinate (CAPCRD)				
COMPLX		-0.996	-0.086	0.26
EDADM		3.033	-0.156	0.65
$R^2 = .04$		F-value = 0.136		

interorganizational relations.

It is concluded on the basis of these findings that the hypothesis is not supported. As noted in the previous section of this chapter, the indicator for obligations (OBLGS) is of questionable quality. We are inclined to believe, in view of the important theoretical role of obligations incurred in the process of power relations, that the measurement of the concept in this study is not adequate and that the hypothesis should be tested following the development of more adequate indicators. However, in view of the fact that a small number of indicators have been developed for all of the complex concepts and hence only a small part of the domain of these concepts have been tapped, we also believe that the indicator should not be discarded until it can be determined whether or not the hypothesized relationships exist with some of these yet to be discovered measures. At the same time, additional indicators of obligations incurred should also be sought.

The third general hypothesis in the model of interorganizational power states:

G.H.3. The total comparative motivational investment of an organization relative to other organizations in its set (MOTIVATS) is a negative linear function of the combined effects of amount and type of resources possessed (RESCRS), the degree of access and constraint it has over the flows of valued resources to and from other organizations (CONSTR), the number of alternative sources of valued resources it has available (AVAIL) and the degree an organization is able to coordinate its subunits

compared to other organizations in its set (CAPCRE), the effect of each is significant.

Stated empirically, the hypothesis is:

E.H.3. The total of the degree of importance of contacts (MOTIV) with other organizations reported by administrators compared to importance reported by other administrators is a negative linear function of the combined effects of the actual operating budget (BUDG) perceived scarcity of budget (PBUDG), the number of times interactions were sent and received by administrators (CENTA), the number of times information was sent and received by administrators (CENTB); the number of sources of funding (FUNDS), the number of client groups served (CLNTG); the number of different positions reported by an administrator (COMPLX) and the total education of an administrator (EDADM) compared to those reported by administrators of other organizations in the county, the effect of each is significant.

The relevant data for evaluating this hypothesis are presented in Table 5.5

Twenty-four percent of the variance ($R^2 = .24$) in motivational investment measured by the importance of contacts (MOTIV) is explained by the hypothesized independent variables. The collective contribution of the hypothesized independent variables to the explanation of variance in motivational investment is not significant at the .25 level. Although there is no evidence for claiming support for the

Table 5.5 Unstandardized and standardized partial regression coefficients, t-values, R^2 and F-value for causes of motivational investment in relations (MOTIVATS) as power exercise (evaluation of hypothesis 3).

Independent Variables	Dependent Variables	b	B	t-values
Resources Possessed (RESCRS)				
	MOTIV-Importance of Contacts			
BUDG		-0.516	-0.331	1.22*
PBDG		0.110	0.200	1.19*
Access and Constraint over Resources (CONSTR)				
CENTA		-0.219	-0.043	0.19
CENTB		0.827	0.117	0.49
Availability of Alternatives (AVAIL)				
FUNDS		0.244	0.230	1.18*
CLNTG		0.145	0.315	1.76**
Capacity to Coordinate (CAPGRD)				
COMPLX		0.164	0.314	1.06
EDADM		-0.336	-0.380	1.79**
$R^2 = .24$		F-value = 1.163 ^a		

*A t-value of 1.17 is significant at the .25 level.

**A t-value of 1.699 is significant at the .10 level.

^aAn F-value of 1.35 is significant at the .25 level.

hypothesis, it is noted for consideration in the model building framework. Nearly one-fourth of the variance is being accounted for. In view of the small size of the sample ($N = 39$), the hypothesized relationships deserve further consideration.

Three of the coefficients for the independent variables; actual budget (BUDG), centrality of director interaction (CENTA) and education of the administrator (EDADM) are negative, as hypothesized. The relationship of perceived scarcity (PBDG) and motivational investment is not as hypothesized. However, two of the independent variables; client groups (CLNTG) and education of the administrator (EDADM) are significant predictors of motivational investment at the .10 level and three independent variables; actual budget (BUDG), perceived scarcity of budget (PBDG) and funding sources (FUNDS) are significant predictors at the .25 level.

Although it cannot be concluded on the basis of these findings that the hypothesis is strongly supported, the hypothesis is accorded some support in the exploratory context of model development.

The fourth general hypothesis in the model of the process of inter-organizational power is:

G.H.4. The relative frequency of selection of cooperative exchange strategies by an organization (COOPER) is a linear function of the combination of the positive direct effects of the total amount and type of resources possessed (RESCRS), total degree of access and constraint over resource flows (CONSTR), the number of alternatives available (AVAIL), the extent of capacity to coordinate subunits (CAPCRD) and the negative direct

effects of number of obligations accumulated (OBLIGATS) and strength of motivational investment (MOTIVATS) relative to other organizations in its set, the effect of each is significant.

Empirically, the hypothesis is stated as:

E.H.4. The total number of joint programs reported by an administrator (COOPA) compared to the total number reported by each other administrator in a county is a linear function of the combination of positive direct effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG); the number of times interactions are sent and received by administrators (CENTA); the number of sources of funding (FUNDS) and the number of client groups (CLNTG); the number of different positions reported by an administrator (COMPLX) and the total education of an administrator (EDADM) and the negative direct effects of the number of times resources are received from minus provided for other organizations (OBLGS) and the total of the compared degree of importance of contacts with other organizations (MOTIV) reported by administrators compared to those reported by other administrators in its set, the effect of each is significant.

The data which are relevant for evaluating the hypothesis are contained in Table 5.6.

The F-test (at the .05 level of significance) indicates that selection of a coalescing cooperative strategy (COOPA) is a function of the

Table 5.6 Unstandardized and standardized partial regression coefficients, t-values, R^2 and F-value for causes of selection of a cooperative strategy (COOPER)(evaluation of hypothesis 4).

Independent Variables	Dependent Variables	b	B	t-values
Resources Possessed (RESCRS) COOPA-Number of Joint Programs				
BUDG		-5.003	-0.684	2.89***
PBDG		-0.619	-0.238	1.64*
Access and Constraint over Resources (CONSTR)				
CENTA		-0.356	-0.149	0.77
CENTB		0.103	0.311	1.53*
Availability of Alternatives (AVAIL)				
FUNDS		-0.460	-0.092	0.55
CLNTG		0.359	0.166	1.04
Capacity to Coordinate (CAPCRD)				
COMPLX		2.279	0.926	3.61***
EDADM		0.260	0.006	0.03
Obligations Incurred (OBLIGATS)				
OBLGS		-0.521	0.024	0.17
Motivational Investment (MOTIVATS)				
MOTIV		0.636	-0.136	0.87
$R^2 = .49$		F-value = 2.666 ^a		

*A t-value of 1.313 is significant at the .20 level.

***A t-value of 2.048 is significant at the .05 level.

^aAn F-value of 2.19 is significant at the .05 level.

independent variables in the hypothesis. Five of the coefficients; centrality of information exchange (CENTB), client groups served (CLNTG), complexity (COMPLX), education of the administrator (EDADM) and obligations incurred (OBLGS) are in the hypothesized direction. Collectively, the independent variable indicators explain a substantial proportion ($R^2 = .49$) of the variance in selection of a cooperative strategy.

Four of the independent variables are significant predictors of selection of a cooperative strategy. The actual budget (BUDG) and complexity (COMPLX) coefficients are significant at the .05 level. The centrality of information exchange (CENTB) and perceived budget scarcity (PBDG) coefficients are significant at the .20 level. Complexity is the most important predictor of selection of a cooperative strategy after controlling for the effects of the other independent variables. The finding indicates, as hypothesized, that the more subunits an organization has relative to other organizations in its set, the more often it will select a cooperative strategy to gain an advantage or balance its power relations. Actual budget is also an important predictor of selection of a cooperative strategy, although its effects are not in the hypothesized direction. According to these data, the smaller the budget, compared to other organizations, the more often the organization will choose a cooperative strategy compared to other organizations in its relations with other organizations. The direction of the relationship of perceived budget scarcity and selection of a cooperative strategy is consistent with that found for actual budget and cooperation.

It can be concluded on the basis of these findings that the hypothesis is only moderately supported. Further theoretical and/or methodological specification would appear to be in order to account for the relationship between budget and selection of a cooperative strategy. The finding that six variables in the hypothesis do not have significant effects on selection of a cooperative strategy argues strongly for the presence of considerable specification error.

The fifth and final general hypothesis in the model of the process of interorganizational power is:

G.H.5. The relative extent of conflict initiated by an organization with other members of its set (CONFLICT) is a linear function of the combination of positive direct effects of the total amount and type of resources possessed (RESCRS), total degree of access and constraint over resource flows (CONSTR), the extent of capacity to coordinate subunits (CAPCRD), the strength of motives invested in relations (MOTIVATS) and the negative direct effects of the number of alternatives available (AVAIL) and the number of obligations accumulated (OBLIGATS) relative to other organizations in its set, the effect of each is significant.

Since there are two measures of the selection of a conflict strategy; two hypotheses, one for each dependent variable indicator are stated empirically:

E.H.5.a. The total comparative extent of conflicting responsibilities score (CONFLA) is a linear function of the combination of positive direct

effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG); the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of different positions reported by an administrator (COMPLX), the total education of an administrator (EDADM), and the total of the compared degree of importance of contacts with other organizations (MOTIV), and the negative direct effects of the number of sources of funding (FUNDS), the number of client groups served (CLNTG) and the number of times resources are received from minus provided for other organizations (OBLGS) as reported by administrators compared to those reported by other administrators in its set, the effect of each is significant.

E.H.5.b. The total comparative extent of disagreements and disputes score (CONFLE), is a linear function of the combination of positive direct effects of the actual operating budget (BUDG), perceived scarcity of budget (PBDG); the number of times interactions are sent and received by administrators (CENTA), the number of times information is sent and received by administrators (CENTB), the number of different positions reported by an administrator (COMPLX), the total education of an administrator (EDADM), and the total of the degree of importance of contacts with other organizations (MOTIV), and the negative direct effects of the number of sources of funding (FUNDS), the number of client groups served (CLNTG) and the number of times resources are received from minus provided for other organizations (OBLGS) as reported by administrators compared to

those reported by other administrators in its set, the effect of each is significant.

The relevant data for evaluating these hypotheses are presented in Tables 5.7 and 5.8.

Only a small percent ($R^2 = .15$) of the variance in conflicting priorities and responsibilities (CONFLA) is explained by the hypothesized independent variables. The F-test for the collective contribution of all the independent variables to the explanation conflicting priorities and responsibilities is not significant at any of the conventional levels (i.e., .10, .05 and .01).

Conflicting responsibilities and priorities represent a latent or indirect form of conflict. Molnar and Rogers (1977) refer to this form of conflict as structural conflict. It may be that this type of conflict among organizations is not a manifestation of the process of their power relations. Rather, structural conflict may grow out of differences in ideologies, ends and means.

Although five of the coefficients; centrality of director interaction (CENTA), funding sources (FUNDS), complexity (COMPLX), obligations (OBLGS) and motivational investment (MOTIV); are in the hypothesized direction, no single independent variable indicators contribute significantly to the explanation of conflicting priorities and responsibilities. On the basis of these findings it is concluded that the hypothesis is not supported.

Table 5.7 Unstandardized and standardized partial regression coefficients, t-values, R^2 and F-values for causes of power manifested in selection of conflict strategies (CONFLICT)(evaluation of hypothesis 5).

Independent Variables	Dependent Variables	b	B	t-values
Resources Possessed (RESCRS) CONFLA-Conflicting Priorities and Responsibilities				
BUDG		-0.122	-0.109	0.36
PBDG		-0.290	-0.073	0.39
Access and Constraint over Resources (CONSTR)				
CENTA		0.502	0.138	0.55
CENTB		-0.135	-0.266	1.01
Availability of Alternatives (AVAIL)				
FUNDS		-0.178	-0.233	1.09
OBLGS		0.183	0.055	0.27
Capacity to Coordinate (CAPCRD)				
COMPLX		0.128	0.339	1.03
EDADM		-0.472	-0.074	0.30
Obligations Incurred (OBLIGATS)				
OBLGS		0.283	-0.009	0.05
Motivational Investment (MOTIVATS)				
MOTIV		-0.164	-0.228	1.14
$R^2 = .15$		F-value = 0.4954		

Table 5.8 Unstandardized and standardized partial regression coefficients, t-values, R^2 and F-values for causes of power manifested in selection of conflict strategies (CONFLICT)(evaluation of hypothesis 5).

Independent Variables	Dependent Variables	b	B	t-values
Resources Possessed (RESCRS)				
	CONFLB-Disagreements and Disputes			
BUDG		0.124	0.006	0.03
PBDG		-0.625	-0.092	0.57
Access and Constraint over Resources (CONST)				
CENTA		0.694	0.111	0.51
CENTB		0.530	0.061	0.27
Availability of Alternatives (AVAIL)				
FUNDS		-0.751	-0.573	3.02**
OBLGS		-0.711	-0.125	0.70
Capacity to Coordinate (CAPCRD)				
COMPLX		0.207	0.320	1.11
EDADM		0.442	0.045	0.21
Obligations Incurred (OBLIGATS)				
OBLGS		-0.120	-0.021	0.14
Motivational Investment (MOTIVATS)				
MOTIV		0.456	0.370	2.12*
$R^2 = .36$		F-value = 1.5414 ^a		

*A t-value of 2.048 is significant at the .05 level.

**A t-value of 2.73 is significant at the .01 level.

^aAn F-value of 1.36 is significant at the .25 level.

The F-test (at the .25 level of significance) indicates that the extent of disagreements and disputes among organizations (CONFLB) is a function of the independent variables in the hypothesis. Collectively the independent variables explain a substantial proportion of the variance ($R^2 = .36$) in disagreements and disputes.

All but two of the coefficients, perceived budget scarcity (PBDG) and motivational investment (MOTIV), are in the hypothesized direction. However, only two independent variable indicators contribute significantly to explanation of the variance in extent of disagreements and disputes, entered last in the equation. The coefficient for funding sources (FUNDS), the most important predictor, is significant at the .01 level while the coefficient for motivational investment (MOTIV) is significant at the .05 level. This is a significant finding in view of the theoretical argument that availability of alternatives and motivational investment would be the critical variables in determining choice of a conflict strategy.

In view of the sample size ($N=39$) and the model building posture of this study, it seems prudent to conclude that the hypothesis is accorded some tentative support, even though the proportion of variance explained is statistically significant at the .25 level. The hypothesized independent variables appear to have some potential for contributing to the development of a theory to explain strategies of power relations among organizations, especially active or overt conflict.

This completes the analysis of the propositions in the causal model using the regression approach. Here our interest has focused on the amount (percent) of variance in each dependent variable indicator (multiple correlation coefficient square - R^2) explained by the independent variable

indicators, taken together, and on the unique contribution of each independent variable indicator on each dependent variable indicator (partial regression coefficient). In the third and final section of the chapter the analysis centers on causal relationships among the latent concepts, as blocks of indicators, posited in the theoretical causal model. In this case we want to know how much of the remaining variance in the dependent variables is explained by each of the latent independent variables (blocks) after all other blocks of independent variables have explained as much of the variance as they can. In this way we can get a better feel for the hypothesized causal relationship among the latent concepts in the theoretical model on the basis of the data. Thus we will examine the multiple-partial correlation square for each block of independent variables with respect to each relevant dependent variable indicator.⁶

The model hypothesizes that each block of independent variables will explain a significant amount of the variance remaining in each dependent variable indicator, after all other blocks of independent variables have been allowed to explain all the variance they can. Figure 5.2 presents the causal model of power with the notations for each of the latent concepts (blocks) and indicators. The notations are presented in Table 4.1 in Chapter IV.

A two step, hierarchical regression format is used to complete the analysis for each block of independent variables and a dependent variable

⁶ Although multiple-partial correlation analysis allows the analysis of effects of a group of independent indicators, taken as a single block, it does not allow analysis of these effects on a group of dependent variable indicators, as a block. Thus the effects of blocks on separate indicators of the dependent variable must be analyzed.

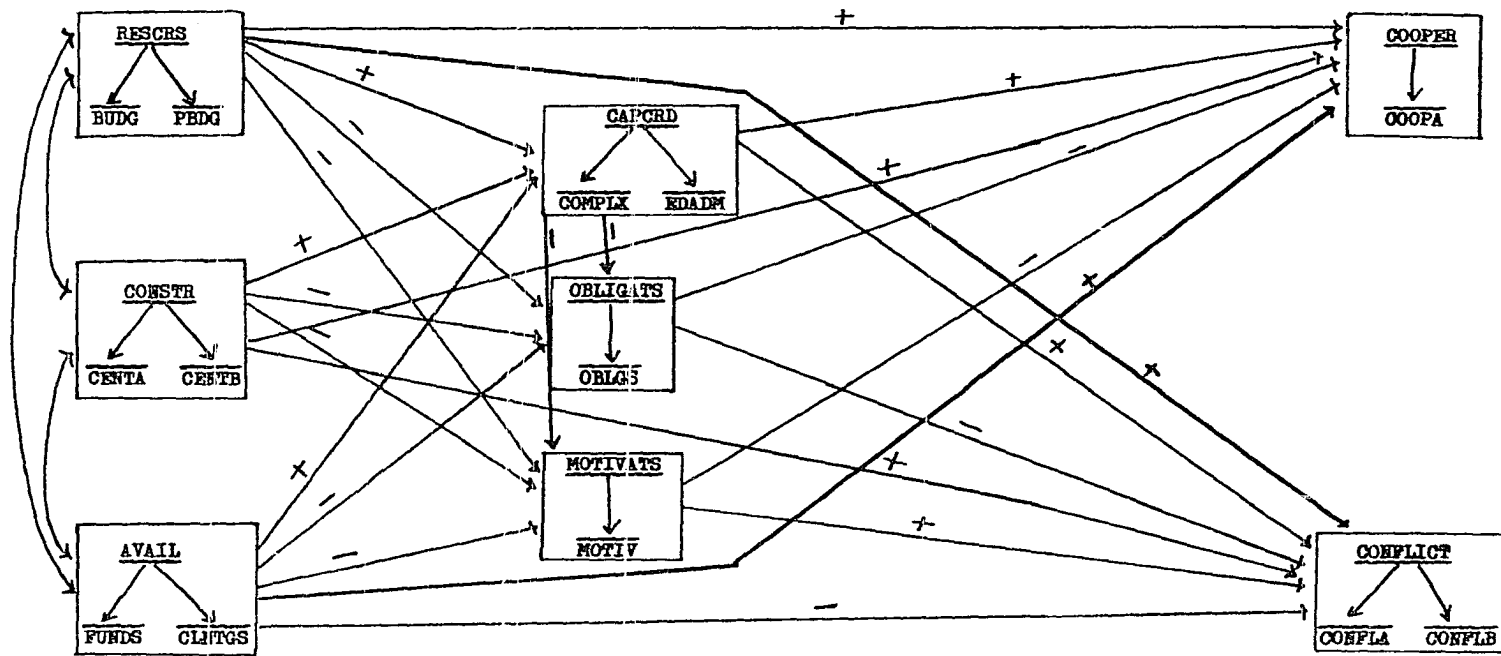


Figure 5.2

The causal model of the process of organizational power, including notations for latent concepts (blocks) and indicators.

indicator. The following regressions were solved for the analysis of the causal model of organizational power:

- (1) Regress COMPLX on BUDG, PBDG after the inclusion of CENTA, CENTB, FUNDS, CLNTG. (Repeat twice - once for each independent block after the other two).
- (2) Regress EDADM on BUDG, PBDG after the inclusion of CENTA, CENTB, FUNDS, CLNTG. (Repeat twice - once for each independent block after the other two).
- (3) Regress OBLGS on BUDG, PBDG after the inclusion of CENTA, CENTB, FUNDS, CLNTG, COMPLX, EDADM. (Repeat three times - once for each independent block after the other three).
- (4) Regress MOTIV on BUDG, PBDG after the inclusion of CENTA, CENTB, FUNDS, CLNTG, COMPLX, EDADM. (Repeat three times - once for each independent block after the other three).
- (5) Regress COOPA on BUDG, PBDG after the inclusion of CENTA, CENTB, FUNDS, CLNTG, EDADM. (Repeat five times - once for each independent block after the other five).
- (6) Regress CONFLA on BUDG, PBDG after inclusion of CENTA, CENTB, FUNDS, CLNTG, COMPLX, EDADM, OBLGS, MOTIV. (Repeat five times - once for each independent block after the other five).
- (7) Regress CONFLB on BUDG, PBDG after inclusion of CENTA, CENTB, FUNDS, CLNTG, COMPLX, EDADM, OBLGS, MOTIV. (Repeat five times - once for each independent block after the other five).

The relevant data for the multiple-partial correlation analysis are presented in Table 5.9 through 5.13.⁷ The data from a series of reduced-form equations are presented for each indicator of each dependent variable.

The square of the multiple-partial correlation coefficient is also recorded for each reduced form equation. The multiple-partial R^2 will tell us what percent of the remaining variance in the respective indicator of the dependent variable is explained by the block of indicators for the latent independent variables that are entered in step two of the equation, after indicators of all other latent independent variables have explained as much variance as possible.

The data from the analysis of the latent dependent variable, capacity to coordinate (CAPCRD), are presented in Table 5.9.

As noted in the previous section which dealt with the regression analysis of effects of independent variable indicators, taken together, on the dependent variables, the F-test (at the .01 level of significance) indicates that capacity to coordinate (measured by COMPLX) is a function of the hypothesized independent variables. However, here we emphasize that 62 percent of the variance ($R^{2c} = .62$) in complexity is explained by the blocks of indicators; resources possessed (RESCRS) constraint over resources (CONSTR) and availability of alternative resources (AVAIL), collectively.

⁷Data from the analysis of regression of each indicator of a single latent dependent variable are presented in a single table.

Table 5.9

Results of the multiple-partial correlation analysis of latent causes of capacity to coordinate as ability to exercise power.

Dependent Variables for CAPCRD	Independent Variables ^a	Square of Multiple-partial Correlation Coefficient ^b	F-values	R ^{2c}	R ^{2d}
COMPLX	RESCRS	.44	25.14***	.32	.62
	BUDG				
	PBUDG				
	CONSTR	.03	0.99	.61	
	CENTA				
	CENTB				
	AVAIL	.12	4.36**	.57	
	FUNDS				
	CLNTGS				
			F-value (full model) = 8.862 ^e		
EDADM	RESCRS	.01	0.32	.25	.26
	BUDG				
	PBDG				
	CONSTR	.10	3.56**	.18	
	CENTA				
	CENTB				
	AVAIL	.17	6.55***	.11	
	FUNDS				
	CLNTG				
			F-value (full model) = 1.917 ^f		

^aBlock of independent indicators entered in step 2.

^bSquare of multiple-partial correlation coefficient for block of indicators entered step 2.

^cSquare of multiple correlation coefficient entered step 1.

^dSquare of multiple correlation coefficient for the full model.

^eA F-value (6,32 d.f.) of 3.42 is significant at the .01 level.

^fA F-value (6,32 d.f.) of 1.82 is significant at the .10 level.

**A F-value (2,36 d.f.) of 3.26 is significant at the .05 level.

***A F-value (2,36 d.f.) of 5.25 is significant at the .01 level.

To evaluate the paths in the theoretical causal model we focus on the proportion of variance explained in the dependent variable by each block of indicators of the latent independent variables, after all other blocks of indicators have been entered in the equation. Both the resources possessed (RESCRS) block and the constraint over resource flows (CONSTR) block each explain significant variance remaining in complexity, after the other two blocks have explained all they can. The multiple-partial correlation coefficient square for resources possessed is .44 and is significant at the .01 level. The multiple-partial correlation coefficient square for availability of alternative resources is .12, significant at the .05 level.

The F-test (at the .10 level of significance) indicates that capacity to coordinate (measured by EDADM) is a function of resources possessed (RESCRS), constraint over resource flows (CONSTR) and availability of alternative resources (AVAIL), collectively ($R^2 = .26$).

The constraint over resource flows (CONSTR) block and the availability of alternative resources (AVAIL) block each explain a significant proportion of the variance remaining in education of the administrator, after the other two blocks of indicators have been allowed to explain all of the variance they can. The multiple-partial correlation coefficient square for constraint over resource flows is .10 and is significant at the .10 level. The multiple-partial correlation coefficient square for availability of alternatives is .17 and is significant at the .05 level.

Table 5.10

Results of the multiple-partial correlation analysis of latent causes of obligations incurred as ability to exercise power.

Dependent Variables	Independent Variables ^a	Square of Multiple-Partial Correlation Coefficient ^b	F-value	R ^{2c}	R ^{2d}
OBLIGATS	RESCRS	.01	0.30	.03	.04
	BUDG PBDG				
	CONSTR	.01	0.30	.03	
	CENTA CENTB				
	AVAIL	.01	0.30	.03	
	FUNDS CLNTG				
	CAPCRD	.02	0.61	.02	
	COMPLX EDADM				
F-value (full model) = 0.1356					

^aBlock of independent indicators entered in step 2.

^bSquare of multiple-partial correlation coefficient for block of indicators entered step 2.

^cSquare of multiple correlation coefficient entered step 1.

^dSquare of multiple correlation coefficient for the full model.

It is concluded on the basis of these findings that the causal link between resources possessed and capacity to coordinate subunits is moderately supported and that the causal relation between constraint over resource flows and capacity to coordinate is tentatively supported. Availability of alternative resources receives strong support as a latent variable cause of an organization's ability to coordinate its subunits as power exercise.

The data from the analysis of the latent dependent variable - obligations incurred (OBLIGATS) are presented in Table 5.10.

On the basis of these findings the latent variables (resources possessed, constraint over resource flows, availability of alternatives and capacity to coordinate subunits) receive no support as causes of the obligations incurred by organizations. The F-test for the proportion variance explained ($R^2 = .04$) in the dependent variable by the blocks of independent variables collectively does not reach any of the conventional levels of significance for empirically evaluating a model in a model building framework (i.e., .25, .10, .05, or .01). Likewise, none of the single blocks of independent variables indicators explain a significant proportion of the variance remaining in obligations, after the other three blocks have been allowed to explain all they can. Thus the paths linking RESCRS, CONSTR, AVAIL, and CAPCRD with OBLIGATS in the causal model are questionable according to these data. However in view of the problems observed earlier with the quality of the indicator of obligations (OBLIGS) and the strong theoretical support for the role of obligations in the ability of organizations to exercise power, it seems reasonable to not totally reject the potential assumed in the theoretical causal linkages.

The data from the analysis of the latent dependent variable, motivational investment (MOTIVATS) are presented in table 5.11.

The hypothesized blocks of independent variables do not jointly explain a significant proportion of the variance in motivational investment, at conventional levels of statistical significance (i.e., F-value = .25, .10, .05 and .01). However, nearly one-fourth of the variance ($R^2 = .24$) is explained by the blocks (RESCRS, CONSTR, AVAIL, and CAPCRD), collectively. This is a substantial amount of the total

Table 5.11

Results of the multiple-partial correlation analysis of latent causes of motivational investment as ability to exercise power.

Dependent Variable	Independent Variables ^a	Square of Multiple-Partial Correlation ^b Coefficient	F-Value	R ^{2c}	R ^{2d}
MOTIVATS	RESCRS	.11	3.71**	.15	.24
MOTIV	BUDG				
	PBDG				
	CONSTR	.01	0.30	.23	
	CENTA				
	CENTB				
	AVAIL	.15	5.29***	.11	
	FUNDS				
	CLNTG				
	CAPCRD	.11	3.71**	.15	
	COMPLX				
	EDADM				
F-value (full model) = 1.1634					

^aBlock of independent indicators entered in step 2.

^bSquare of multiple-partial correlation coefficient for block of indicators entered step 2.

^cSquare of multiple correlation coefficient entered step 1.

^dSquare of multiple correlation coefficient for the full model.

**An F-value (2,34 d.f.) of 3.26 is significant at the .05 level.

***An F-value (2,34 d.f.) of 5.25 is significant at the .01 level.

variance in the dependent variable indicator collectively accounted for by the independent latent variables. Because the sample size is small and there is theoretical rationale for the causal linkages, we believe the hypothesized relationships should be given further consideration.

The multiple-partial correlation coefficient square for three of the independent variable blocks are significant at the .05 level or beyond. AVAIL explains 15 percent of the variance remaining in the motivational investment indicator (MOTIV), after RESCRS, CONSTR and CAPCRD have explained all they can. The multiple-partial correlation coefficient square (.15) is significant at the .01 level. RESCRS and CAPCRD also each explain a significant proportion of the remaining variance in MOTIV after the variance explained by the other three blocks has been removed. The multiple-partial correlation coefficient squares for RESCRS and CAPCRD are both .11 and significant at the .05 level.

On the basis of these findings it is concluded that the hypothesized causal paths linking the latent independent variables with motivational investment are moderately supported.

The data from the analysis of the latent dependent variable, cooperative strategies (COOPER), are presented in Table 5.12. The F-test (at the .05 level of significance) indicates that the hypothesized blocks of independent variables collectively explain a significant proportion ($R^2 = .49$) of the variance in selection of a cooperative strategy. Four of the hypothesized causal paths linking latent independent variables with cooperation are supported at least to some degree. The multiple-partial correlation square for the block, RESCRS, is .27 and the coefficient for the block, CAPCRD is .39. These coefficients are both statistically significant at the .01 level indicating that a significant proportion, 27 percent and 39 percent respectively, of the remaining variance in cooperation is explained by each block, after the other five

Table 5.12

Results of the multiple-partial correlation analysis of latent causes of cooperative strategies as manifestations of power relations.

Dependent Variable	Independent Variables ^a	Square of Multiple-Partial Correlation ^b Coefficient	F-value	R ^{2c}	R ^{2d}
COOPER	RESCRS	.27	10.36***	.30	.49
COOPB	BUDG				
	PBDG				
	CONSTR	.09	2.77**	.44	
	CENTA				
	CENTB				
	AVAIL	.06	1.78*	.46	
	FUNDS				
	CLNTG				
	CAPCRD	.39	17.90***	.16	
	COMPLX				
	EDADM				
	OBLIGATS	.00	0.00	.49	
	OBLGS				
	MOTIVATS	.02	0.57	.47	
	MOTIV				
F-value (full model) = 2.666 ^e					

^aBlock of independent indicators entered in step 2.

^bSquare of multiple-partial correlation coefficient for block of indicators entered step 2.

^cSquare of multiple correlation coefficient entered step 1.

^dSquare of multiple correlation coefficient for the full model.

^eAn F-value (10,28 d.f.) of 2.19 is significant at the .05 level.

*An F-value (2,30 d.f.) of 1.45 is significant at the .25 level.

**An F-value (2,30 d.f.) of 2.49 is significant at the .10 level.

***An F-value (2,36 d.f.) of 5.25 is significant at the .01 level.

have explained all the variance they can. The multiple-partial correlation coefficients for blocks, CONSTR and AVAIL are .09 and .06, respectively. Both coefficients are statistically significant at .10 and .25 levels, indicating that the proportion of remaining variance in cooperation explained by each of these two blocks is less convincing as support for the respective hypothesized causal paths. The hypothesized relations linking OBLIGATS and MOTIVATS causally with cooperation (COOPA) received no support from the data.

On the basis of these findings it is concluded that the hypothesized linkages of the latent variables; resources possessed and capacity to coordinate, as causes of selection of a cooperative strategy are strongly supported. Overall, it is concluded that the hypothesized latent causes of cooperation in the theoretical model are moderately supported. Because of the important role of obligations and motivational investment in the power process, it is suggested that these latent variables be given further consideration with efforts to identify more adequate indicators of each of the latent concepts.

The data from the analysis of the latent dependent variable, conflict strategies (CONFLICT), are presented in Tables 5.13 and 5.14.

The hypothesized blocks of independent variables, collectively, do not explain significant variance in the dependent variable conflict, measured as CONFLA. However, 15 percent of variance in CONFLA is explained by the independent variable blocks, taken together. This is a fairly sizeable proportion of variance accounted for and in view of the small sample size ($N = 39$) should not be totally disregarded.

Table 5.13 Results of the multiple-partial correlation analysis of latent causes of conflict strategies as manifestations of power relations; measured as CONFLA.

Dependent Variables	Independent Variables ^a	Square of Multiple-Partial Correlation Coefficient ^b	F-value	R ^{2c}	R ^{2d}
CONFLICT CONFLA	RESCRS	.01	0.28	.14	.15
	BUDG				
	PBDG				
	CONSTR	.03	0.86	.12	
	CENTA				
	CENTB				
	AVAIL	.05	1.47*	.11	
	FUNDS				
	CLNTG				
	CAPCRD	.03	0.86	.12	
	COMPLX				
	EDADM				
	OBLIGATS	.00	0.00	.15	
	OBLGS				
	MOTIVATS	.05	1.47**	.11	
	MOTIV				
F-value (full model) = 0.4954					

^aBlock of independent indicators entered in step 2.

^bSquare of multiple-partial correlation coefficient for block of indicators entered step 2.

^cSquare of multiple correlation coefficient entered in step 1.

^dSquare of multiple correlation coefficient for the full model.

*An F-value (1,30 d.f.) of 1.38 is significant at the .25 level.

**An F-value (2,30 d.f.) of 1.45 is significant at the .25 level.

Table 5.14

Results of the multiple-partial correlation analysis of latent causes of conflict strategies as manifestations of power relations; measured as CNFLB.

Dependent Variable	Independent Variables ^a	Square of Multiple-Partial Correlation Coefficient ^a	F-value	R ^{2c}	R ^{2d}
CONFLICT CNFLB	RESCRS	.02	0.57	.35	.36
	BUDG				
	PBDG				
	CONSTR	.05	1.47*	.33	
	CENTA				
	CENTB				
	AVAIL	.26	9.84****	.13	
	FUNDS				
	CLNTG				
	CAPCRD	.07	2.11*	.31	
	CMELX				
	EDADM				
	OBLIGATS	.02	0.57	.35	
	OBLGS				
	MOTIVATS	.15	4.94***	.25	
	MOTIV				
F-value (full model) = 1.5414 ^e					

^aBlock of independent indicators entered in step 2.

^bSquare of multiple-partial correlation coefficient for block of indicators entered step 2.

^cSquare of multiple correlation coefficient entered step 1.

^dSquare of multiple correlation coefficient for the full model.

^eAn F-value (10,28 d.f.) of 1.36 is significant at the .25 level.

*An F-value (2,30 d.f.) of 1.45 is significant at the .25 level.

**An F-value (1,36 d.f.) of 4.11 is significant at the .05 level.

***An F-value (2,36 d.f.) of 5.25 is significant at the .01 level.

Only two blocks of independent variables (AVAIL and MOTIVATS) each explain a significant proportion of the remaining variance in CONFLA, after the other five blocks have explained all they can. The multiple-partial coefficients squared are .05 for both blocks and are significant at the .25 level.

On the basis of these findings it is concluded that the hypothesized causal relations of the latent independent variables and conflict, measured as CONFLA, are not supported, but should be further explored in a model building context with additional and/or revised indicators.

The F-test (at the .25 level of significance indicates that the hypothesized independent variables explain a significant proportion of the variance ($R^2 = .36$) in CONFLB, collectively.

Four of the six hypothesized blocks of independent variables each explain a significant proportion of the variance remaining in CONFLB, after the variance explained by the other five blocks has been considered. The multiple-partial correlation coefficient square (.26) for AVAIL is statistically significant at the .01 level. And the coefficient for MOTIVATS (.15) is statistically significant at the .05 level. These findings indicate that the causal paths hypothesized between availability of alternatives and conflict and between motivational investment and conflict are supported.

The multiple-partial correlation coefficients squared for CONSTR and CAPCRD (.05 and .07, respectively) suggest that constraint over resource flows and capacity to coordinate subunits may contribute a significant proportion of the remaining variance in conflict, after the other latent independent variables have explained all they can. On the basis of these

findings it is concluded that the hypothesized latent variable causes of conflict measured as CONFLB are moderately supported.

In summary, the empirical findings lend some support to the hypothesized theoretical causal model. The findings, even when limitations of the methods and data are considered, provide a number of useful insights for building a theory of the process of interorganizational power. In Chapter VI, the conclusions and implications that emerge from the process of constructing a theory of power are discussed.

CHAPTER VI. IMPLICATIONS AND SUMMARY

There are two main objectives of this final chapter. The first is to discuss the implications that are drawn from an evaluation of the theory of organizational power relations. These implications will be discussed under the following headings: (1) implications for theory, (2) implications for method, (3) implications for policy, and (4) implications for future research.

The second main objective is to briefly summarize the dissertation in terms of the objectives stated in Chapter I.

Implications for Organizational Theory

The problem addressed in this dissertation is the development of a formal theory of the process of organizational power in the context of relations within a network of organizations. In Chapter II organizational power was conceptualized as a process inherent in the relations of organizational actors. The theoretical framework viewed formal organizations as semi-open systems. This view recognized that organizations are rational and goal-seeking, but that organizations are also influenced by environmental elements, particularly other organizations. The conceptualization stresses that organizations are not moved about helplessly by environmental contingencies. Rather organizations seek to increase or balance power relative to other organizations in order to reduce the

uncertainties of environmental contingencies. Thus, the interaction strategies (cooperation, conflict, circumvention, and withdrawal) that organizations select to deal with other organizations in their environment are considered key variables to be explained in the model of the process of organizational power relations. The empirical analysis of the model produced findings which have some important implications for organizational theory.¹

The findings regarding the model of power indicate that there is utility in viewing the selection of cooperative and conflicting interaction strategies as outcomes in a process of organizational power relations. Variables explicated in the process of power relations that were posited as causes of the selection of cooperative and conflicting strategies were found to be important predictors of the selection of each strategy. Forty-nine percent of the variance in selection of a cooperative strategy was explained by the variables, collectively. The variables found to have a significant direct effect on the selection of a cooperative strategy were comparative complexity, actual budget, perceived budget scarcity and centrality of information exchanged. Substantively, this means that the relative selection of a cooperative strategy, defined as joint programs, was found to be dependent upon an organization having more positions, less

¹The conceptual model includes the four interaction strategies as key variables to be explained which intervene in the process of power relations that are ultimately manifested in organizational effectiveness and prestige. However, the focus of the theory building and evaluation activities of the dissertation was an explanation of two of the interaction strategies - cooperation and conflict.

budget, more perceived scarcity of budget and greater exchange of information compared to other organizations in its set. Although actual budget and perception of little scarcity were hypothesized to be positively related to selection of a cooperative strategy, they are both found to be important predictors of cooperative interaction.

Fifteen percent of the variance in selection of a conflict strategy, measured as conflicting priorities and responsibilities, was explained by the independent variables in the model of power, collectively.² None of these variables had a significant direct and independent effect on conflicting priorities and responsibilities. Thirty-six percent of the variance in selection of a conflict strategy defined as disagreements and disputes, was explained by the variables, collectively. The variables found to have a significant direct effect on the selection of this form of a conflict strategy were the comparative number of funding sources and motivational investment. Substantively, this means that the relative selection of a conflict strategy, defined as disagreements and disputes, was found to be dependent upon an organization having fewer alternative sources of valued resources available to it and greater motivational investment in its relations with other organizations compared to these other organizations in its set.

Findings regarding the analysis of relationships among the latent independent variables hypothesized as causes of selection of cooperative

²The proportion of variance in conflicting priorities and responsibilities explained by the independent variables was not statistically significant.

and conflicting strategies also uphold the view that strategies are outcomes in the process of interorganizational power relations. The latent variables; resources possessed, capacity to coordinate, access to and constraint over resource flows and availability of alternative sources of resources each provided a significant proportion of the explanation of variance remaining in selection of a cooperative strategy, after the effects of all other independent variables had been accounted for. The substantive meaning of this finding is that when the unique effects of the independent latent causes are compared, possession of resources, capacity to coordinate subunits, access to and constraint over resource flows, and availability of alternative sources of valued resources, relative to other organizations in its set, are each important latent causes of the organization's relative choice of a strategy of cooperation. Possession of resources and the capacity to coordinate subunits emerge as the most important latent causes,

The comparative latent variables; access to and constraint over resource flows, availability of alternative sources of resources and motives invested in relations with other organizations each explained a significant proportion of variance remaining in selection of a conflict strategy, defined as disagreements and disputes, after all the other independent variables had together explained all they could. In substantive terms this means that when the various effects of the latent causes are compared, an organization's relative access to and constraint over resources in the network, the availability of alternative sources of resource relative to other organizations and its relative motivational investment in

relations with other organizations are each important causes of the frequency it will select a strategy of conflict compared to the frequency other organizations in its set will select a conflict strategy. On the basis of these findings availability of alternative sources and motivational investment are the most important latent causes of the selection of a conflict strategy.

The findings associated with the analysis of relationships among variables explicated from the dimensions of the power process; power bases and power exercise; also indicate that there is potential in the view of organizational power relations as a causal process.

Sixty-two percent of the variance in the capacity to coordinate subunits aspect of power exercise, defined as organizational complexity, was explained by the variables explicated from power basis, collectively. Actual budget and the number of funding sources had significant direct effects on complexity. Substantively, this means that an organization's actual budget and number of alternative sources of valued resources, relative to others in its network, directly influences its relative capacity to coordinate subunits for power exercise.

Variables explicated as the basis of power explained twenty-six percent of the variance in the capacity to coordinate subunits aspect of power exercise, defined as education of the administrator. The number of client groups had a significant direct effect on the education of the administrator. In substantive terms, this finding indicates that the larger the number of client groups that an organization serves relative to other organizations in its network, the greater its relative capacity to coordinate subunits as power exercise.

Only four percent of the variance in the relative number of obligations accumulated, as an aspect of power exercise, was explained by hypothesized independent variables explicates of power basis and exercise, collectively. Substantively, it would appear that power exercise reflected in obligations accumulated are not caused by these aspects of power basis and exercise.

However, 24 percent of the variance in motivational investment, as an aspect of power exercise, was explained by hypothesized variables explicated from the basis and exercise of power concepts. Actual budget, perceived budget scarcity, the number of funding sources, the number of client groups served and the education of the administrator each had significant direct effects on this aspect of power exercise. Substantively, this suggests that power exercise reflected in the organization's relative motivational investment in its interorganizational relations is a direct outcome of its budget, perceived scarcity of budget, the number of sources of funding, the number of groups of clients it serves and the number of years of education its administrator has compared to other organizations in its set.

The findings regarding analysis of causal relationships among the latent concepts explicated from the dimensions of power basis and exercise indicate that the model of the process of power relations has some usefulness. Availability of alternatives and resources possessed each contributed a significant proportion to the explanation of the variance remaining in capacity to coordinate subunits, defined as complexity, after all the other independent latent concepts had explained all they could. Access

to and constraint over resources and availability of alternatives explained a significant proportion of the variance remaining in capacity to coordinate subunits defined as education of the administration after all the other independent latent concepts had explained all they could. In substantive terms this means that an organization's capacity to coordinate subunits or to use the energy of "organization" to exercise power is the result of separate causal links from the three aspects of the basis of its power - the resources it possesses, its access to and constraint over resources and the availability of alternative sources of resources relative to other organizations in the environment.

A significant proportion of the variance remaining in motivational investment as power exercise defined as the importance of contacts, was contributed by each of the latent concepts; resources possessed, availability of alternatives and capacity to coordinate subunits; after the effects of all the other latent variables had been removed. Substantively, this suggests that the relative motives an organization invests in relations with other organizations as capacity for power exercise is determined by the amount of resources it possesses, the availability of alternatives to obtain or dispose of resources and the capacity to coordinate its subunits compared to other organizations in its environment, with each latent variable producing a separate effect.

The findings associated with the model of organizational power provide some encouragement for the conceptual approach that has been taken. The approach is consistent with arguments advanced by sociologists who reason that power is a highly abstract multidimensional construct that

must be explicated so that relationships among concepts comprising the dimensions of the power process can be analyzed (Burt, 1977; Olsen, 1978). Furthermore, the findings suggest that the view of organizations as goal seeking actors that seek to manipulate their power relations in order to control environmental uncertainties has potential. Overall, the findings lend some support to the notion that relative intra and interorganizational characteristics comprising the basis and exercise of power determine the strategy that is selected to control environmental contingencies.

Unquestionably, the moderate to small amount of variance explained in the dependent variables indicates that other important variables should be added to the model. With the exception of obligations accumulated, however, the amount of variance explained in the dependent variables is encouraging. And the analysis of causal relationships posited among the latent concepts suggest that additional efforts to develop a theory of organizational power should include attempts to revise and add to the model developed here. These findings should provide impetus for the development of future theoretical models that concentrate on identifying and specifying additional dimensions of the power process and for further explicating the complex concepts comprising these dimensions in order to add to the explanation of manifestations of interorganizational power relations.

Implications for Methods

The findings reported in this study have implications for sampling of the empirical units of analysis, measurement of theoretical concepts; and the use of multiple-partial correlation to analyze causal relationships among blocks of multiple indicators of complex concepts.

Secondary data were used for the empirical analysis in this study. The empirical units of analysis were county natural resource agencies located in five counties in Northeast Iowa. Thus the sample must be regarded as a nonrepresentative, purposive one or as a total population of natural resource agencies in the five Northeast Iowa counties. In either case inferences cannot be made beyond the organizations studied.

The size of the sample ($N = 39$) also placed a constraint on the empirical analysis. Eight variables were included in the theoretical causal model. Even if a probability sample had been available, the sample size would have been inadequate in view of the number of variables in the model. While we believe the sample has provided useful data for empirical evaluation of the model in an exploratory and theory building framework, it is advised that future efforts to build and evaluate theories use a representative and substantially larger sample of organizations to empirically evaluate the fit of the theory to data. This will tend to enhance the stability of statistical coefficients and maximize the generalizability of theories that are developed and tested.

Multiple indicators were used to measure the complex concepts included in the process of organizational power relations. The use of multiple indicators to measure the entire domain of meaning included in highly complex concepts is advantageous because the approach makes use of several indicators and the separate identity of each indicator is maintained throughout the analysis. Use of multiple indicators facilitates the assessment of reliability and validity of measures. Measures of the same concept are expected to be highly intercorrelated and correlated

moderately and in a homogenous fashion with measures of different concepts. However, this assumes that either all dimensions of the same concept are highly intercorrelated or that all of the separate concept dimensions of a highly complex concept have been identified with multiple indicators specified for each dimension. In this theory building study the multiple indicators specified as measures are not necessarily expected to be highly intercorrelated. This is so because in the early phase of building a theory, the probability that the few indicators developed for each complex concept reflect a single dimension of the concept meaning is very slim. For this reason it is advised that future efforts to build and test a theory of organizational power include the use of multiple indicators to measure complex concepts and these efforts focus initially on the further theoretical specification of dimensions of the complex concepts with development of an additional number of indicators to adequately measure each of the dimensions. Once this was accomplished there would be potential for the measures to meet assumptions required for the use of techniques to make statistical adjustments for measurement and specification error in the empirical analysis of the causal theory.

All measures used in the study were constructed from data characterizing single organizations. The measures were constructed to reflect properties of the relations of single organizations. We believe that this approach is worthy of replication with a larger representative sample of organizations. However, it is also advised that the causal relationships be tested with organizational dyads as the units of analysis. This would allow evaluation of the effect of power relations with a particular other

organization on the interaction strategies that are selected.

Multiple-partial correlation analysis was used to evaluate the causal linkages among latent (complex) concepts in the theoretical model. Blalock (1972) suggests that the multiple-partial correlation coefficient has a number of potential benefits which are mostly unrealized because social scientists are largely unfamiliar with its use.

One advantage is that the relative amount of variance remaining in a dependent variable that is accounted for by a set of independent variables, after other independent variables have explained all they can, can be determined. This has substantive potential for building and evaluating theoretical models that contain complex concepts for which multiple indicators have been developed. Using the multiple-partial approach, indicators of the complex concepts can be grouped together in blocks. Unlike the index approach, the indicators operate independently, in blocks, without forming a summary or composite measure. And compared to an indicator by indicator approach to assess the fit of a model with data, the number of tests required can be greatly reduced. Although indicators of dependent variables must be analyzed separately, this allows more than one test of each prediction which may reveal differences in the way blocks of independent variables affect the separate components of the dependent variable (Sullivan, 1974). This can be an insightful advantage for model building activities.

In general, the multiple-partial approach is recommended for use in future efforts to develop and evaluate theoretical models containing complex concepts with multiple indicators identified for each concept. The approach is useful for evaluating the hypothesized linkages among the

latent concepts while retaining the advantages of the multiple indicator approach for measurement of the complex multidimensional concepts.

Implications for Development of Policy

The implications of the findings of this study for development of policy for organizations generally are highly speculative and must await replicative research with larger and representative samples of organizations. Even if only natural resource agencies or very similar organizations are the object of inference, implications must be tentatively advanced because of the small sample size, the nonrandom sampling procedure, and the modest size of coefficients. However, if used along with other information that is available to organizational decision-makers, implications tentatively drawn, can be used as a basis for discussion and evaluation of policy. Furthermore, if the findings are sustained by future research, they contain some important implications for policy that can promote the rational use of interorganizational strategies.

First, organizations that have smaller budgets, greater perception of budget scarcity, greater centrality in the network of information exchanged and greater complexity relative to other organizations are more likely to initiate cooperative strategies with the other organizations in their environment. This finding is consistent with a study of health and welfare organizations conducted by Aiken and Hage (1968) where they found support for the hypothesis that organizations that are more complex are also more innovative and thus seek cooperative programs with other organizations in their environment in order to gain needed resources.

Greater relative structural centrality may be the basis of a power advantage that is needed to encourage an organization to use cooperative contacts for access to additional resources or power through obligations.

Greater relative resources possessed (budget and perceived scarcity) promote greater organizational complexity. Thus, this aspect of the power base may be essential to development of the capacity to exercise power while the structural basis is important for the actual exercise of power. This implies that consideration should be given to enhancing the structural location of organizations in networks regarding the flows of valued resources and to promotion of the use of resources possessed to acquire more positions to increase the capacity for coordination if cooperation with other organizations is the desired objective. Perhaps resources should be limited beyond those needed to develop the capacity for power exercise in order to encourage cooperative organizational interactions.

Second, organizations that have greater relative availability of alternative resources (via funding sources) and less relative motivational investment in relations with other organizations are less likely to enter into direct conflict with these organizations in their environment. This implies that some attention should be devoted to the development of more alternative sources of valued resources for organizations and to decreasing the commitments among organizations regarding their relations, if conflict is to be prevented.

Since the implications of the various aspects of the power process and interaction strategies for organizational effectiveness cannot be

projected prior to research to evaluate the relationships between each aspect of the power process and effectiveness, it seems advisable that policy formulators promote research to evaluate all the relationships posited in the theoretical model, including the characteristics of power relations that determine organizational effectiveness.

Implications for Future Research

The theory of the process of organizational power that has been presented in this study is a modest attempt to build and evaluate a theoretical model that can be refined and expanded with further theoretical and empirical analysis. Unquestionably much remains to be done in the area of interorganizational power relations. Not only is there much that needs to be accomplished regarding more theoretical elaboration of the process of power relations, antecedents and consequences of the process also need to be conceptualized and relationships with the process tested.

This study has addressed the problem in terms of explicating the power process and developing causal linkages among the concepts inherent in the dimensions of power. The findings suggest the following implications for future research.

First, future research should strive to replicate the study with data on other types of organizations, both public and private. Second, future research should endeavor to evaluate all the relationships posited in the theoretical model, including the characteristics of power relations that determine organizational effectiveness and prestige. Research should build on a central sociological assumption that power is manifest

in effectiveness and status. This approach would construct a theoretical model that reflects the assumptions underlying much of the prevailing organizational literature and decisional behavior and test that model in the empirical or real world arena. Third, future research should consider a longitudinal design to allow a more rigorous evaluation of the causal relationships and thus data for more direct inferences about cause and effect relations. Fourth, future research should explore the use of comparative characteristics that reflect relations within a set of organizations rather than a focus on single organizations or research on dyads. Finally, future research should consider use of an experimental design in order to analyze reciprocal effects between variables in the model.

Summary and Evaluation of the Theory

The problem addressed by this dissertation was to develop a formal theory of the process of organizational power. Recognition of the importance of the power concept in theoretical discussion of social organization in spite of frustrated efforts to develop conceptual and empirical analyses which promote cumulative research findings was the central rationale for selection of this problem.

The general objective of the study was to enhance the understanding of organizational power by constructing a formal theory of power as a process characterizing the relations among formal organizations. To accomplish this objective, three dimensions - the basis, exercise and manifestations - of the process of organizational power relations were

explicated. Complex concepts subsumed by each dimension were identified and defined in both theoretical and operational terms. Causal relationships among the latent concepts were also specified, theoretically and operationally. Specific indicators of the complex concepts were developed and the theory was evaluated with data drawn from a sample of natural resource agencies.

The specific objectives of the dissertation were:

- (1) to elaborate a conceptual definition of organizational power as a multidimensional process of relations among organizational actors,
- (2) to explicate the dimensions of the process of organizational power and develop theoretical and operational definitions of the concepts central to each dimension,
- (3) to develop propositions linking concepts of the dimensions of the power process with clarification of theoretical and operational linkages,
- (4) to order the theoretical propositions into an interrelated set by selecting some statements as premises or assumptions and arranging the remainder into a model of causal relationships,
- (5) to identify specific indicators for the concepts contained in the causal model,
- (6) to empirically evaluate the causal model, and
- (7) to assess the exercise of theory construction and evaluate the formal theory in terms of the contributions to the understanding of the process of organizational power.

Each of these objectives were identified to enable the study to contribute to organizational theory by: (1) constructing a formal theory

of organizational power relations conceptualized as a pervasive, highly abstract and multidimensional process and (2) empirically evaluating the theory with data to serve as the basis for further studies to refine and build models of organizational power relations.

The formulations of the objectives was guided by an awareness of: (1) the importance of organizational power relations and of the strategies used by organizations to increase and/or balance their relative power to organizational practitioners as well as to society generally, (2) the status of past theory and research regarding interorganizational power, and (3) the underutilization of the process of theory construction as a means to promote understanding of power relations. These considerations were discussed in Chapter I.

The conceptualization of organizational power as a process characterizing the relations among organizations was discussed in Chapter II. Organizational power was viewed as a highly abstract and multidimensional process that included the relative control and conversion of resources into actions to achieve desired ends. The dimensions of the power process were identified as: (1) the basis of power - control of resources, (2) exercise of power - conversion of resources for action, and (3) the manifestations of power - outcomes of the basis and exercise of power. In Chapter II these general dimensions of the power process were further explicated to identify the complex concepts that comprise each dimension. Theoretical definitions were presented for each of the complex concepts.

Organizations were conceptualized as semi-open systems which interact with environmental elements (including other organizations) in order

to control the certainty of their environments (Thompson, 1967). The manipulation of power relations was seen as a way of managing environmental contingencies. Specifically, organizations are seen as selecting certain strategies of interaction with other organizations, depending upon specific causal linkages among concepts subsumed by the basis and exercise of power, in order to reduce environmental uncertainty.

In Chapter III theoretical statements were developed to explain the process of organizational power. Assumptions for the formal theory were stated and general hypotheses were deduced. Finally, the complex concepts suggested as defining characteristics of the process of power were organized in a causal model. The focal dependent variables in the model were interaction strategies selected by organizations - cooperation, conflict, circumvention and withdrawal.

Operational definitions of the complex concepts explicated from the dimensions of the power process and of the units of analysis were presented in Chapter IV. The operational definitions were presented in a general way to be applied across various types of organizations and also were presented for the development of specific measures used in this study. It was argued that multiple indicators is the approach that is most advantageous for measurement of the abstract, multidimensional concepts subsumed by the power process. Specific indicators were selected as measures of the complex concepts from data drawn from natural resource agencies in five Northeast Iowa counties.

The empirical hypotheses corresponding to the five general hypotheses contained in the causal model of the process of organizational power were presented in Chapter IV. An empirical hypothesis was developed for each indicator of the complex concepts posited as dependent variables. The statistical procedures used to empirically analyze the hypotheses and the linkages hypothesized among the latent concepts in the model were discussed. These procedures were linear regression and multiple-partial correlation.

The findings from the empirical analysis of the hypotheses and causal model were reported in Chapter V. Descriptive statistics and zero-order correlations were used to examine the quality of each indicator. The results indicated that the indicators of resources possessed (BUDG), obligations incurred (OBLGS), cooperation (COOPA) and conflict (CONFLB) lacked some quality and that efforts should be directed at improving these indicators for future empirical analyses. Three of the five hypotheses contained in the causal model of power received some empirical support using the linear regression approach. Using the multiple-partial correlation analysis, a majority of the latent concepts hypothesized as determinants of latent concepts posited as results received some support.

When comparative capacity to coordinate subunits as power exercise was considered as a dependent variable, the following results were obtained.¹ Sixty-two percent of the variance in comparative capacity to

¹The reader is again reminded that all concepts in the model are comparative characteristics of the relations of organizations.

coordinate subunits, measured as complexity, was explained by the six indicators of concepts subsumed by the basis of power. Comparative actual budget and number of funding sources were the only variables found to have a significant direct effect on comparative complexity. Twenty-six percent of the variance in comparative capacity to coordinate subunits, measured as education of the administrator, was explained by the six indicators of concepts subsumed by the basis of power. Only the comparative number of client groups served was found to have a significant direct effect on the comparative education of the administrator.

In the evaluation of causal paths in the theoretical model, the resources possessed block and availability of alternatives block each explained a significant proportion of variance remaining in complexity, after the other two blocks subsumed by the basis of power had explained all they could. The constraint over resource flows block and the availability of alternatives block each explained a significant proportion of variance remaining in education of the administrator, after the other two blocks had explained all they could.

When comparative obligations incurred as power exercise was considered as a dependent variable the following results were obtained. Only four percent of the variance in comparative obligations incurred was explained by the hypothesized independent variables, collectively. No single independent variable had a significant direct effect on obligations incurred by organizations.

Similarly, in the evaluation of causal linkages among the latent concepts in the model, no latent concept, hypothesized as a cause of

obligations, explained significant variance remaining in obligations, after all the other hypothesized blocks had explained all they could.

When comparative motivational investment as power exercise was the dependent variable in the analysis of the model, the following results were obtained. Twenty-four percent of the variance in comparative motivational investment was explained by the hypothesized independent variables, collectively. Comparative actual budget, comparative perceived budget scarcity, comparative number of funding sources, comparative number of client groups served and comparative education of the administrator each had a significant independent effect on comparative motivational investment.

Evaluations of the causal linkages between latent independent variables and motivational investment revealed that the resources possessed block, availability of alternative resources block and capacity to coordinate subunits block each explained a significant proportion of variance remaining in motivational investment, after all other hypothesized causal blocks had explained all they could.

When comparative selection of a cooperative strategy was the focal dependent variable in the model, the following results were obtained. Forty-nine percent of variance in comparative selection of a cooperative strategy was explained by the hypothesized independent variables, collectively. Comparative actual budget, comparative perceived budget scarcity, comparative information exchanged and comparative complexity each had a significant direct effect on comparative selection of a cooperative strategy.

The analysis of causal linkages hypothesized for the latent concepts revealed that the resources possessed, constraint over resource flows,

availability of alternatives and capacity to coordinate subunits blocks each explained significant remaining variance in selection of a cooperative strategy, after all other blocks had explained all they could.

When comparative selection of a conflict strategy was the focal dependent variable in the model, the following results were obtained. Fifteen percent of the variance in comparative selection of a conflict strategy, measured as conflicting priorities and responsibilities, was explained by the hypothesized independent variables, collectively. None of the variables had a significant direct effect on conflict, measured as conflicting responsibilities and priorities. Thirty-six percent of the variance in comparative selection of a conflict strategy, measured as disagreements and disputes, was explained by the hypothesized independent variables, collectively. Comparative number of funding sources and comparative motivational investment each had a significant independent effect on conflict, measured as disagreements and disputes.

The analysis of causal linkages hypothesized for the latent concepts revealed that only the availability of alternatives block explained a significant proportion of variance remaining in conflict, measured as conflicting priorities and responsibilities, after all other hypothesized blocks had explained all they could. However, the constraint over resources block, availability of alternatives block, capacity to coordinate block and motivational investment block each explained a significant proportion of the variance remaining in conflict, measured as disagreements and disputes, after all other blocks have explained all they could.

The implications of these findings for organizational theory, policy development, methods and future research were discussed in the first section of this final chapter.

In conclusion, the objectives set forth for the study have been partially met. A formal theory has been prepared which allows its subjection to empirical observation and analysis (testability). Assumptions of the theory were explicitly stated. The assumptions stated allowed as much explanation as possible within the limitations of the generality of the theory and the conceptual unknowns that remain (parsimony). The theory was advanced as a middle range formulation which intended to address a limited number of issues (scope). Finally, the theory offered considerable potential, as demonstrated by the empirical evaluation, for description, explanation and prediction of the process of organizational power.

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ACKNOWLEDGEMENTS

The author is sincerely grateful to Dr. David Rogers for his guidance and support as major professor during the major portion of my doctoral preparation. I am indebted to him for his direction in the initial phase of preparation of the dissertation.

I am also grateful to Dr. Charles Mulford who assumed the responsibilities of major professor during preparation of the dissertation. He provided invaluable inspiration and guidance to me in completing the dissertation and has sustained an interest in my academic and professional development for which I am deeply appreciative.

Sincere appreciation is also extended to the members of my advisory committee, Drs. Gerald Klonglan, Richard Warren, Peter Nowak and Clifford Smith for their encouragement and assistance during completion of my program of study and dissertation.

A special thank you is extended to Dr. Caroline Faisal for her patient and expert consultation throughout the preparation of the dissertation.

Sincere thanks is also extended to Carol Feld and Mary Smitherman for typing the several drafts of the dissertation and to my good friends, Janet Specht and Marilyn Woodworth, who always seem to be there when I need them.

I express deepest appreciation to my husband, Dr. Richard Maas; my children, Robin, Richard II and Regan; and my father, Kenneth Speas for

the many ways they supported me and the many times I neglected them during my doctoral program.

Finally, I express love and respect for my mother, Miriam Johnson Speas, deceased. I wish she could have shared this achievement.